

Final

Environmental Assessment

for the

Implementation of Proposed Actions in the Moody Air Force Base Integrated Natural Resources Management Plan (INRMP)



September

2015

Final

FINDING OF NO SIGNIFICANT IMPACT AND FINDING OF NO PRACTICABLE ALTERNATIVE

IMPLEMENTATION OF THE MOODY AIR FORCE BASE (AFB) INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN (INRMP) MOODY AFB, GEORGIA

Pursuant to provisions of the National Environmental Policy Act (NEPA), Title 42 United States Code (USC) Sections 4321 to 4347, implemented by Council on Environmental Quality regulations, Title 40, Code of Federal Regulations (CFR) 500–1508, and 32 CFR § 989, Environmental Impact Analysis Process, the U.S. Air Force (USAF) assessed the implementation of the natural resources management activities outlined in the *Integrated Natural Resources Management Plan Years FY 2014–FY 2017, Moody AFB, Georgia*, dated September 2013. Projects covered in the Environmental Assessment (EA) are from the 2014 Annual Review of the INRMP and include those planned during Fiscal Years (FY) 2015–2018.

The INRMP was recently updated for Moody AFB. The INRMP was prepared to support the conservation and rehabilitation of natural resources consistent with the military mission of Moody AFB. The INRMP was developed to meet the statutory provision of the Sikes Act Improvement Act of 1997, as amended. Implementation of the INRMP is needed for (1) compliance with environmental laws and regulations, (2) implementation of guidelines and policies for natural resources management, (3) application of best available data and adaptive management, and (4) sustainment of the military training mission.

The EA, incorporated by reference into this finding, analyzes the potential environmental consequences of projects from the 2014 Annual Review of the INRMP and includes those planned in FY 2015–2018. These actions were developed in response to issues and management concerns obtained from cooperating agencies (i.e., the U.S. Fish and Wildlife Service and Georgia Department of Natural Resources), the military mission, and other interested stakeholders.

The EA evaluated the Proposed Action and the No Action Alternative. Resources that were considered in the impacts analysis include air quality, geological resources, water resources, biological resources, safety, and cultural resources.

PROPOSED ACTION

The USAF proposes to conduct integrated ecosystem management of natural resources under the Moody AFB INRMP. The Proposed Action is the implementation of natural resources management activities outlined in the Moody AFB INRMP, which is consistent with the Sikes Act. Although the Sikes Act specifies only that a formal review must be completed no less often than every 5 years, Department of Defense policy requires installations to review INRMPs annually in cooperation with the other parties to the INRMP. Annual reviews facilitate "adaptive management" by providing an opportunity for the parties to review the goals and objectives of the plan, as well as establish a realistic schedule for undertaking proposed actions. Projects covered in the EA are from the 2014 Annual Review of the INRMP.

NO ACTION ALTERNATIVE

Under the No Action Alternative, management of natural resources would continue as characterized in the Moody AFB 2007 INRMP, which contained management activities for FY 2008–2012. Other management plans, normally integrated into the INRMP but remaining outside of the 2007 INRMP, would not be incorporated under the No Action Alternative.

SUMMARY OF FINDINGS

The USAF concluded that, under the Proposed Action, there would be no significant adverse impacts to the following resources: air quality, geology and soils, water resources, biological resources, safety, and cultural resources. In addition, the EA concluded that the Proposed Action would have no impact on infrastructure, utilities, transportation, hazardous materials and wastes, land use, noise, or socioeconomics and environmental justice. No significant adverse cumulative impacts would result from activities associated with the adoption of any alternative when considered with past, present, or reasonably foreseeable future projects at Moody AFB.

Air Quality. Short-term, minor, adverse effects on air quality would result from prescribed burns and from the timber harvest and vegetation control projects. The prescribed burns would generate emissions of criteria pollutants directly from the combustion of vegetation. The estimated annual air emissions from the timber harvest and vegetation control projects are not expected to trigger any air quality thresholds of significance because the emissions of each criteria pollutant would be less than 0.01 percent of the regional inventory for each pollutant. Additionally, the estimated maximum annual emissions of CO_2 would be approximately 0.15 percent of the 25,000 metric tpy of CO_2-equivalent emissions meaningful assessment threshold as established by the CEQ. Moody AFB is in attainment/unclassifiable for all criteria pollutants. Therefore, neither an applicability analysis nor a conformity determination is required. Consequently, there would be no significant impacts to air quality as a result of the Proposed Action.

Geology and Soils. Short-term, minor, adverse effects on soils would occur; however, these impacts would be beneficial in the long term when vegetation is reestablished. Implementation of certain projects in the INRMP (e.g., clearcuts and prescribed burning) may temporarily expose soils to erosion. By implementing an effective soil erosion and sedimentation program, impacts on geology and soils associated with erosion and sedimentation on Moody AFB would be minimized. In the long term, implementation of the INRMP would increase soil stabilization. Therefore, there would be no significant impacts to geology and soils as a result of the Proposed Action.

Water Resources. Short-term, minor, adverse impacts on water resources would occur from land-disturbing activities, including silvicultural activities, mechanical midstory removal, and prescribed burning. However, long-term, beneficial impacts would be expected from the reduction of soil erosion and aquatic weed control. Moody AFB would continue to implement the wetland monitoring plan. Monitoring of the water quality in the wetlands would continue to determine if the plans and practices being implemented are sufficient to prevent degradation to the system. No effects on floodplains would be expected. Consequently, there would be no significant impacts to water resources as a result of the Proposed Action.

Biological Resources. Short-term, minor, adverse impacts on biological resources would occur from land-disturbing activities; however, long-term, beneficial impacts would be expected from the habitat improvement projects and species inventories. Several projects scheduled in the INRMP include conducting surveys or studies of Moody AFB's protected species (e.g., gopher tortoise, bald eagle, and newly listed species) and habitat (e.g., Dudley's Hammock). Assessment of populations at Moody AFB would provide conditions and trends, which would allow management practices to be applied where and when needed. Implementation of routine assessment and monitoring for these special status species provides a method for protecting these species and a baseline of data that could be used to prioritize projects and identify the most efficient allocation of resources. Therefore, long-term, beneficial impacts on protected species and their habitat would be expected.

Projects including the control of mid-story hardwoods, restoration of native pine forests, and selective thinning would result in short-term disturbances but long-term beneficial impacts on the habitat for wildlife

and protected species. Consequently, no significant impacts to biological resources would occur as a result of the Proposed Action.

Safety. The Proposed Action would involve projects that have been completed prior to analysis in this EA (e.g., demographic studies and wetlands monitoring plans) and projects that would be similar to those previously implemented. Activities would be completed in accordance with applicable USAF safety regulations and USAF Occupational Safety and Health Administration requirements.

There are numerous projects that would have a beneficial impact on Bird/Wildlife Aircraft Strike Hazard including prescribed burning, hardwood mid-story control, and timber thinning. Tree regeneration projects would be balanced with tree trimming and reduction. No significant impacts to safety would occur as a result of the Proposed Action.

Cultural Resources. Natural resources management activities would be coordinated with the installation archeologist to minimize potential impacts to installation cultural resources. Activities that may generate ground disturbances, such as timber harvesting, site preparation, planting, and mid-story hardwood removal are not conducted in known archeological areas without consultation with the installation archeologist and State Historic Preservation Office.

American Indian tribes with ties to the area were consulted throughout the preparation of the EA and given the opportunity to alert the USAF to the location of traditional cultural properties that may be affected by the Proposed Action. Their response stated there were no concerns regarding the project. Consequently, no significant impacts to cultural resources would occur as a result of the Proposed Action.

FINDING OF NO PRACTICABLE ALTERNATIVE

It is USAF policy to avoid activities within areas containing wetlands and floodplains, where practicable. Although short-term, minor adverse impacts on water resources would occur from the Proposed Action, there would be long-term beneficial impacts on surface waters and wetlands. During the development of the Moody AFB INRMP, the installation consulted with natural resources professionals at the U.S. Fish and Wildlife Service and Georgia Department of Natural Resources to formulate specific goals and objectives for the conservation and protection of natural resources on the installation. Following the development of goals and objectives, various natural resources management activities that could be implemented to meet these goals and objectives were discussed and analyzed, which led to the development of a specific list of projects that would be carried forward in the INRMP as the best alternative to conserve and rehabilitate natural resources at Moody AFB within the military mission context. Other alternatives considered during INRMP development either did not meet the goals or were considered ineffective, removed from the INRMP, and eliminated from further detailed analysis. Implementation of the final approved INRMP is required per the statutory provisions of the Sikes Act (16 USC 670 et seq) and Air Force Instruction 32-7064, *Integrated Natural Resources Management*.

Pursuant to Air Force Instruction 32-7064, *Integrated Natural Resources Management*, Executive Orders 11988, *Floodplain Management*, and 11990, *Protection of Wetlands*, and the authority delegated by Secretary of the Air Force Order 791.1, *Environment*, and taking the above information into account, I find there is no practicable alternative to this action and the Proposed Action includes all practicable measures to minimize harm to the environment. This decision was reached after taking into account all submitted information and considering a full range of practical alternatives that would meet project requirements and are within the legal authority of the USAF.

FINDING OF NO SIGNIFICANT IMPACT

Based on my review of the facts and analyses contained in the attached EA, conducted under the provisions of NEPA, Council on Environmental Quality regulations, and 32 CFR Part 989, I have determined that implementation of the Moody AFB INRMP would not have significant impacts on the quality of the human or natural environment, either by itself or cumulatively with other projects at Moody AFB. Accordingly, an Environmental Impact Statement (EIS) will not be prepared. This decision has been made after taking into account all submitted information, and considering a full range of practical alternatives that would meet project requirements and are within the legal authority of the USAF. The signing of this Finding of No Significant Impact completes the USAF Environmental Impact Analysis Process.

Jennifer L. Kilbourn

JENNIFER L. KILBOURN, Colonel, USAF
Chief, Civil Engineer Division (ACC/A4C)

ABBREVIATIONS AND ACRONYMS

$\mu g/m^3$	micrograms per cubic meter
AFB	Air Force Base
AFI	Air Force Instruction
BASH	Bird/Wildlife Aircraft Strike Hazard
BMP	best management practice
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2	carbon dioxide
CWA	Clean Water Act
DOD	Department of Defense
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
ERP	Environmental Restoration Program
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
FY	Fiscal Year
GBBL	Grand Bay-Banks Lake
GDNR	Georgia Department of Natural Resources
GHG	greenhouse gas(es)
GIS	Geographic Information Systems
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
INRMP	Integrated Natural Resources Management Plan
MBTA	Migratory Bird Treaty Act
MFES	Moody Fire Emergency Services
MMRP	Military Munitions Response Program
mg/m^3	milligrams per cubic meter
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
O_3	ozone
OSHA	Occupational Safety and Health Administration
Pb	lead
P.L.	Public Law
$PM_{2.5}$	Particulate matter with an aerodynamic size less than or equal to 2.5 microns
PM_{10}	Particulate matter with an aerodynamic size less than or equal to 10 microns
ppb	parts per billion
ppm	parts per million
RTE	Rare, threatened, and endangered
SDWA	Safe Drinking Water Act
SHPO	State Historic Preservation Officer
SO_2	sulfur dioxide
tpy	ton per year
U.S.C.	United States Code
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
USFWS	U.S. Fish and Wildlife Service
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound(s)
WMA	Wildlife Management Area

COVER SHEET

FINAL
ENVIRONMENTAL ASSESSMENT FOR THE IMPLEMENTATION OF PROPOSED ACTIONS IN THE MOODY AIR FORCE BASE INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN (INRMP)

Responsible Agencies: The Air Force Civil Engineer Center (AFCEC) and the 23d Wing at Moody Air Force Base (AFB), Georgia.

Affected Location: Moody AFB, Georgia.

Proposed Action: Implement the natural resource management activities outlined in the *Integrated Natural Resources Management Plan Years FY 2014 – FY 2017, Moody AFB, Georgia*, dated September 2013. Projects that will be covered in the EA are from the 2014 Annual Review of the INRMP and include those planned during Fiscal Years (FY) 2015–2018.

Report Designation: Environmental Assessment.

Abstract: The Integrated Natural Resources Management Plan (INRMP) was recently updated for Moody AFB. The INRMP was prepared to support the conservation and rehabilitation of natural resources consistent with the military mission of Moody AFB. The INRMP was developed to meet the statutory provision of the Sikes Act Improvement Act of 1997, as amended.

The Proposed Action consists of implementing the natural resource management activities outlined in the *Integrated Natural Resources Management Plan Years FY 2014 – FY 2017, Moody AFB, Georgia*, dated September 2013. Projects that will be covered in the EA are from the 2014 Annual Review of the INRMP and include those planned during FY 2015–2018. Management plans addressed in the INRMP are focused on the unimproved areas of the installation and do not include the management of improved grounds, including grass and landscape maintenance, which are addressed in other installation plans and documents. The purpose of the Proposed Action is to assist the installation with the conservation and rehabilitation of natural resources consistent with the military mission of Moody AFB for the next 4 years (FY 2015–2018). The need for the Proposed Action is to implement the natural resource management actions identified in the INRMP. Implementation of the INRMP is needed for (1) compliance with environmental laws and regulations; (2) implementation of guidelines and policies for natural resources management; (3) application of best available data and adaptive management; and (4) sustainment of the military training mission.

The EA has been prepared to evaluate the Proposed Action and the No Action Alternative. Resources that will be considered in the impacts analysis are air quality, geological resources, water resources, biological resources, safety and cultural resources.

FINAL

ENVIRONMENTAL ASSESSMENT
FOR THE
IMPLEMENTATION OF PROPOSED ACTIONS IN THE MOODY AIR FORCE BASE INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN (INRMP)

AIR FORCE CIVIL ENGINEER CENTER
AND MOODY AIR FORCE BASE

SEPTEMBER 2015

FINAL
ENVIRONMENTAL ASSESSMENT
FOR THE IMPLEMENTATION OF PROPOSED ACTIONS IN THE MOODY AIR FORCE BASE INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN (INRMP)

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1. Purpose, Need, and Scope

1.1 Introduction

The U.S. Air Force (USAF) has recently updated the Integrated Natural Resources Management Plan (INRMP) for Moody Air Force Base (AFB). The INRMP was prepared to assist the installation commander with the conservation and rehabilitation of natural resources consistent with the military mission of Moody AFB for the next 4 years (Fiscal Year [FY] 2015–2018). The INRMP is consistent with the Sikes Act Improvement Act of 1997, as amended through 2010 (16 United States Code [U.S.C.] 670a et seq.), which requires the preparation, implementation, update, and review of an INRMP for each military installation in the United States and its territories with significant natural resources. This Environmental Assessment (EA) will evaluate the potential environmental impacts associated with implementing activities outlined in the INRMP and the No Action Alternative.

1.2 Background

Moody AFB is an Air Combat Command installation in southern Georgia (see **Figure 1-1**). The installation is in Lowndes and Lanier counties, approximately 10 miles northeast of the City of Valdosta.

Moody AFB was named in memory of Major George Putnam Moody, an early USAF pioneer. Major Moody worked on the inspection board for AT-10 transitional trainer aircraft that were later sent to Moody AFB. From 1941 until late 1975, the installation served as a training base for thousands of USAF pilots. In 1975, the 347th Tactical Fighter Wing relocated to Moody AFB from Thailand and the mission changed from pilot training to flying fighters.

In 1992, the installation was reassigned from the inactivating Tactical Air Command to the Air Combat Command. In 2001, Moody became the 347th Rescue Wing, and its mission changed to search and rescue. In 2006, the USAF redesignated the 347th Rescue Wing as the 347th Rescue Group and assigned it to the 23d Wing, which became the host unit at the installation.

Today, Moody AFB is home to the 23d Wing and the 93d Air Ground Operations Wing. The 23d Wing organizes, trains, and employs combat-ready A-10C, HC-130P, and HH-60G aircraft, Guardian Angel Weapons System, and approximately 5,500 military and civilian personnel including units in Nevada, Florida, and Arizona. The 23d Wing is comprised of six groups; five located at Moody AFB and one at Davis-Monthan AFB in Arizona. The 93d Air Ground Operations Wing members conduct offensive and defensive ground combat operations worldwide to protect expeditionary aerospace forces with an airborne capability. The wing is comprised of three operational groups, 17 squadrons, and 10 detachments. Moody AFB is also home to the 81st Fighter Squadron, which is a tenant unit of the 14th Flying Training Wing at Columbus, Mississippi. The 81st Fighter Squadron trains international pilots and maintainers on the A-29 Super Tucano Aircraft.

1.3 Purpose of and Need for the Proposed Action

The Proposed Action consists of implementing the natural resource management activities outlined in the *Integrated Natural Resources Management Plan Years FY 2014 – FY 2017, Moody AFB, Georgia*, dated September 2013 (Moody AFB 2013). Projects that will be covered in the EA are from the 2014 Annual Review of the INRMP and include those planned during FY 2015–2018 (Moody AFB 2014).

The purpose of the Proposed Action is to direct and support the installation with the conservation and rehabilitation of natural resources consistent with the military mission of Moody AFB for the next 4 years

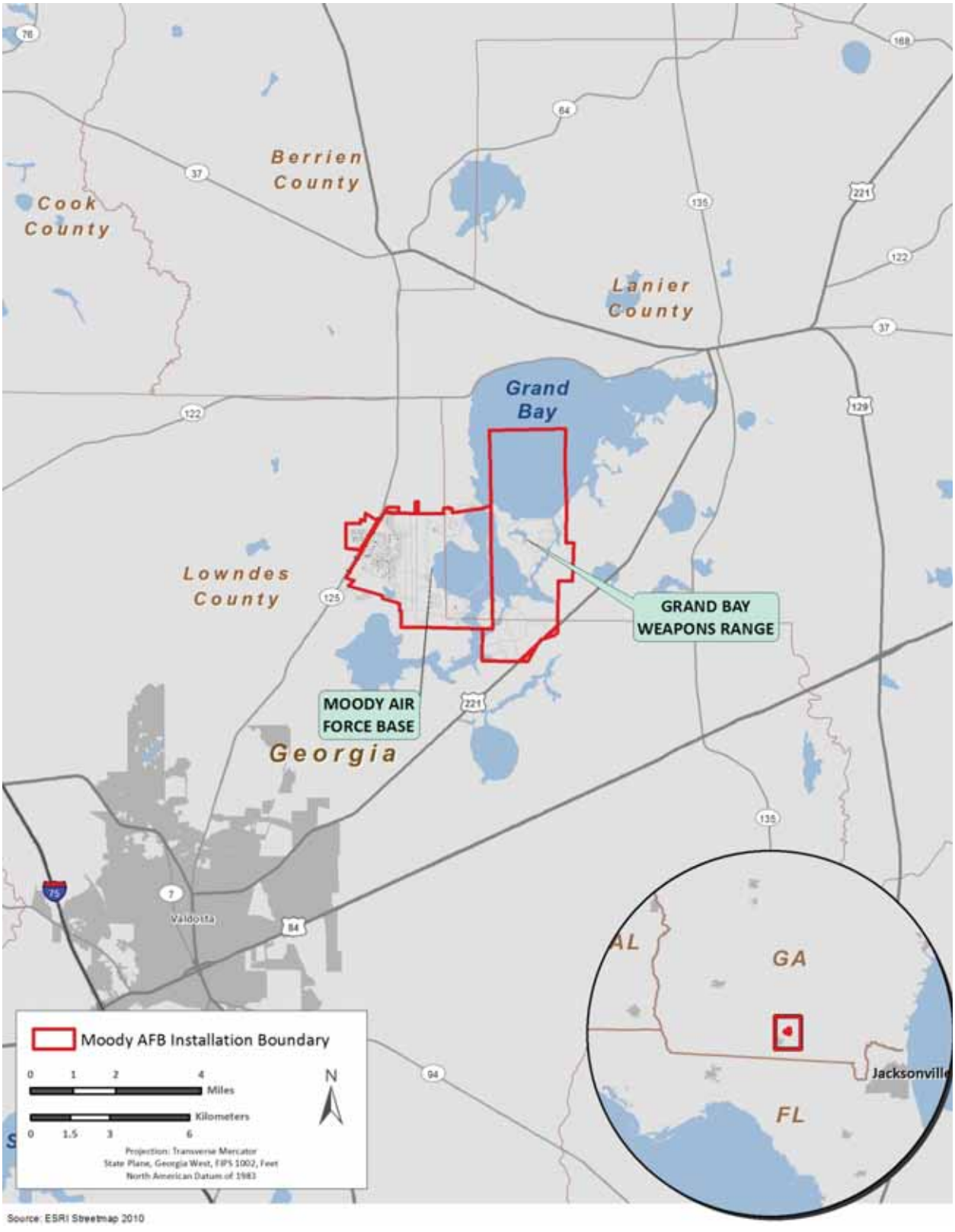


Figure 1-1. Moody AFB Vicinity Map

(FY 2015–2018). The INRMP is based on an interdisciplinary approach to ecosystem management and addresses wildlife and forest management goals and objectives, as well as the conservation and enhancement of wetlands and protected species in the context of the military mission. Management plans discussed in the INRMP are focused on the unimproved areas of the installation and do not directly address the management of improved grounds, including grass and landscape maintenance, which are addressed in other installation plans and documents as cross-functional programs. Specific projects have been identified for implementation for the time period of 2015 through 2018 to enhance the natural environment, provide outdoor recreation, maintain and enhance rare, threatened, and endangered (RTE) species, and provide realistic military training areas to support the overall mission of Moody AFB.

The need for the Proposed Action is to implement the natural resource management actions identified in the INRMP. Implementation of the INRMP is needed for (1) compliance with environmental laws and regulations; (2) implementation of guidelines and policies for natural resources management; (3) application of best available data and adaptive management; and (4) sustainment of the military training mission.

1.4 Scope of the Analysis

The scope of the EA will include an evaluation of the Proposed Action and the No Action Alternative. Under the No Action Alternative, projects in the Moody AFB INRMP would not be implemented. In accordance with Council on Environmental Quality (CEQ) regulations implementing National Environmental Policy Act (NEPA) (40 Code of Federal Regulations [CFR] 1502.14), the No Action Alternative will be analyzed to provide a baseline against which the environmental impacts of implementing the range of alternatives addressed can be compared. The EA will examine the environmental impacts of the Proposed Action and No Action Alternative on the following resource areas: airspace management, noise, land use, air quality, geological resources, water resources, biological resources, cultural resources, infrastructure, hazardous materials and wastes, safety, and socioeconomics and environmental justice. The cumulative impacts analysis to be discussed in **Section 5** includes on-installation projects associated with the Proposed Action and other relevant on-installation and off-installation projects.

1.5 Summary of Key Environmental Compliance Requirements

1.5.1 National Environmental Policy Act

NEPA of 1969 (42 U.S.C. Section 4321–4347) is a Federal statute requiring the identification and analysis of potential environmental impacts associated with proposed Federal actions before those actions are taken. The intent of NEPA is to help decisionmakers make well-informed decisions based on an understanding of the potential environmental consequences and take actions to protect, restore, or enhance the environment. NEPA established the CEQ, which is charged with the development of implementing regulations and ensuring Federal agency compliance with NEPA. CEQ regulations mandate that all Federal agencies use a prescribed structured approach to environmental impact analysis. This approach also requires Federal agencies to use an interdisciplinary and systematic approach in their decisionmaking process. This process evaluates potential environmental consequences associated with a proposed action and considers alternative courses of action.

The process for implementing NEPA is codified in Title 40 of CFR, Parts 1500–1508, *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act*. The CEQ regulations specify that the NEPA process should be used to identify and assess the reasonable alternatives to proposed actions that would avoid or minimize adverse effects of those actions upon the quality of the natural and human environment. CEQ regulations specify that an EA be prepared to provide evidence and

analysis for determining whether to prepare a Finding of No Significant Impact (FONSI), or whether the preparation of an Environmental Impact Statement (EIS) is necessary. If an EA is completed and significant impacts are not identified, the decisionmaker would sign and publish a FONSI. The EA can aid in an agency's compliance with NEPA by identifying when an EIS is unnecessary while organizing information when an EIS is required.

Air Force Policy Directive 32-70, *Environmental Quality*, states that the USAF will comply with applicable Federal, state, and local environmental laws and regulations, including NEPA. The USAF's implementing regulation for NEPA is the *Environmental Impact Analysis Process*, codified in 32 CFR Part 989, as amended.

1.5.2 Integration of Other Environmental Statutes and Regulations

Moody AFB is required by Federal law (e.g., Sikes Act, Endangered Species Act [ESA] of 1973, Clean Water Act of 1972) and Department of Defense and USAF regulations and instructions to conserve and enhance native ecosystems and environments, including RTE species, and to maximize public outdoor recreational opportunities within the constraints of the military mission. To complete these requirements, the Sikes Act requires military installations to develop and implement a cooperative INRMP in concert with the U.S. Fish and Wildlife Service (USFWS) and state wildlife management agencies (e.g., Georgia Department of Natural Resources [GDNR]). The Sikes Act mandates not only the preparation of an INRMP but also the implementation of the management activities contained in the plan. According to the Sikes Act, the purpose of a military conservation program is conservation and rehabilitation of natural resources; sustainable multipurpose use of those resources; and public access to military lands, subject to safety requirements and military security (16 U.S.C. §670a et seq.). Moreover, the conservation program must be consistent with the mission-essential use of the installation and its lands and cause a no net loss of military land use. Both the INRMP and the natural resources program that it supports must meet the guidance and regulations provided in Department of Defense (DOD) Instruction 4715.03, *Environmental Conservation Program*, and Air Force Instruction (AFI) 32-7064, *Integrated Natural Resources Management*. These guidance documents and policies collectively require a plan and management approach consistent with mission support, multipurpose use, integration, ecosystem or landscape-level management, and environmental compliance and stewardship. The Moody AFB INRMP has been prepared to meet natural resources regulatory requirements while ensuring no net loss in the capability of military installation lands to support the military mission of the installation.

Other Federal and state laws and regulations that impact the management of natural resources at Moody AFB and which were considered during preparation of this INRMP include the Federal Water Pollution Control Act of 1977; Archeological Resources Protection Act of 1979; Fish and Wildlife Coordination Act; Migratory Bird Treaty Act (MBTA); Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990; Executive Order (EO) 11990, *Protection of Wetlands*; EO 11987, *Exotic Organisms*; EO 11989, *Off-road Vehicles on Public Land*; EO 11988, *Floodplain Management*; and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*.

While not comprehensive, a list of potentially applicable laws, regulations, policies, and planning criteria is provided in **Appendix A**.

1.6 Public Involvement and Agency Consultation

Interagency Coordination and Intergovernmental Coordination. NEPA requirements help ensure that environmental information is made available to the public during the decisionmaking process and prior to actions being taken. The premise of NEPA is that the quality of Federal decisions will be enhanced if proponents provide information to the public and involve the public in the planning process. The

Intergovernmental Coordination Act and EO 12372, *Intergovernmental Review of Federal Programs*, require Federal agencies to cooperate with and consider state and local views in implementing a Federal proposal. Through the IICEP process, Moody AFB notifies relevant Federal, state, and local agencies of the Proposed Action, identifies alternatives, and provides sufficient time to present any specific environmental concerns associated with the Proposed Action. IICEP materials related to this action were sent to relevant agencies and have been included in **Appendix B**.

Native American Tribal Consultation. EO 13175, *Consultation and Coordination with Indian Tribal Governments* (6 November 2000), directs Federal agencies to coordinate and consult with federally recognized Native American tribal governments on a government-to-government basis whose interests might be directly and substantially affected by activities on federally administered lands. To comply with legal mandates, federally recognized tribes that are affiliated historically within the Moody AFB geographic region are invited to consult on proposed undertakings that have a potential to affect properties of cultural, historical, or religious significance to the tribes. Because many tribes were displaced from their original homelands, tribes with cultural roots in an area might not currently reside in the region where the undertaking is to occur. Effective consultation requires identification of tribes based on ethnographic and historical data and not simply a tribe's proximity to a project area. The tribal consultation process is distinct from NEPA consultation or the IICEP processes and requires separate notification of all relevant tribes by Moody AFB. The timelines for tribal consultation are also distinct from those of intergovernmental consultations.

A letter requesting participation in the EA process was sent to each affiliated tribe on 8 August 2014 describing the Proposed Action and asking them to identify any potential concerns they might have. Follow-up letters were sent on 5 September 2014 and phone calls were made to tribes who had yet to respond after follow-up letters were sent (for additional information see **Section 4.6.2**). The goal of the tribal consultation process is not simply to consult on a particular undertaking but rather to build constructive relationships with the appropriate Native American tribes. Consultation should lead to constructive dialogue in which Native American tribes are active participants in the planning process. IICEP materials related to this action were sent to relevant Native American tribal governments and have been included in **Appendix B.**

Public Involvement. A Notice of Availability was published in the *Valdosta Times* and the *Lanier County Advocate* on April 1 and 5, respectively. The Draft EA was subsequently available to the public for a 30-day review and comment period. The Notice of Availability was issued to solicit comments on the Proposed Action and involve the local community in the decisionmaking process. Agency comments on the Draft EA were considered prior to a decision being made as to whether or not to sign a FONSI (see **Appendix B** for comment letters on the Draft EA).

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2. Description of the Proposed Action and Alternatives

This section presents information on implementing the activities in the Moody AFB INRMP. As discussed in **Section 1.5.1**, the NEPA process evaluates potential environmental consequences associated with a proposed action and considers alternative courses of action. Reasonable alternatives must satisfy the purpose of and need for a proposed action, which are defined in **Section 1.3**. CEQ regulations specify the inclusion of a No Action Alternative against which potential effects can be compared. While the No Action Alternative would not satisfy the purpose of or need for the Proposed Action, it is analyzed in detail in accordance with CEQ regulations.

2.1 Proposed Action

The USAF proposes to conduct integrated ecosystem management of natural resources under the Moody AFB INRMP. The Proposed Action is the implementation of natural resources management activities outlined the Moody AFB INRMP, which is consistent with the Sikes Act. Although the Sikes Act specifies only that a formal review must be completed no less often than every 5 years, DOD policy requires installations to review INRMPs annually in cooperation with the other parties to the INRMP. Annual reviews facilitate "adaptive management" by providing an opportunity for the parties to review the goals and objectives of the plan, as well as establish a realistic schedule for undertaking proposed actions. Projects that will be covered in the EA are from the 2014 Annual Review of the INRMP and include those planned in FY 2015–2018 (Moody AFB 2014). These actions were developed in response to issues and management concerns obtained from cooperating agencies (i.e., the USFWS and GDNR), the military mission, and other interested stakeholders.

2.1.1 Primary Management Goals

Goals are the primary focal points for the implementation of the INRMP over the 4-year planning period (FY 2015–2018), and include primary and supportive goals. Primary goals are broad and over-arching, developed to reach a desired future condition. Supportive goals are used to organize groupings of related quantifiable and measurable objectives. Each goal is supported by objectives that specifically state what will be done, how it will be done, and when it will be done. Each objective is comprised of specific projects planned for implementation for each year of the INRMP.

- **Principal Goal I:** Enhance military mission flexibility and success while maintaining current populations of RTE species at Moody AFB.
- **Principal Goal II:** Enhance military mission flexibility and success while maintaining and enhancing the quality of existing wetlands and watersheds.
- **Principal Goal III:** Maintain and enhance fish and wildlife management opportunities at Moody AFB within the context of the military mission.
- **Principal Goal IV:** Enhance military mission flexibility and success through conducting land management and ground maintenance activities at Moody AFB.
- **Principal Goal V:** Enhance military mission flexibility and success while maintaining and enhancing commercial forest management at Moody AFB.
- **Principal Goal VI:** Utilize ecosystem and biodiversity management principles at Moody AFB to integrate the conservation of the natural infrastructure with military mission needs.

A description of these goals, supporting goals, and the objectives are discussed in the following text.

Principal Goal I. Enhance military mission flexibility and success while maintaining current populations of RTE species at Moody AFB.

RTE species are known to occur on or near Moody AFB. The ESA and AFI 32-7064 require proactive management to ensure the long-term viability of these RTE species and their habitat. Due to this requirement, and because it is an accepted scientific principle that the management of the habitat for one species also benefits other species that share similar resource requirements, efforts were focused on managing for the habitat needs of the keystone and RTE species. A keystone species is a plant or animal that plays a unique and crucial role in the way an ecosystem functions. Without keystone species, the ecosystem would be dramatically different or cease to exist altogether. Managing these habitat needs would in turn maximize overall biodiversity on the installation while at the same time providing realistic areas for military training. Additionally, by ensuring that populations of keystone and RTE species are not declining, military trainers would have additional flexibility in planning mission activities in these habitats and the installation can ensure that there is no net loss in the amount of land available to support military training requirements.

RTE species management activities proposed for the next 4 years are primarily based upon the following supporting goals and objectives:

Supporting Goal 1 – Identify keystone and RTE species populations on the installation.

Objective 1. Maintain current listings of keystone and RTE species and listing statuses known to occur, or that could potentially occur on Moody AFB.

Objective 2. Continue to support surveys and inventories of known keystone and RTE species on the installation.

Objective 3. Continue to conduct surveys and inventories for newly proposed listed species.

Objective 4. Continue to identify keystone and RTE species locations and habitat in the field using global positioning system techniques, where appropriate.

Supporting Goal 2 – Continue to collect demographic information on keystone and RTE species.

Objective 1. Estimate population size of each keystone and RTE species on the installation.

Objective 2. Determine sex and age distribution for each species of interest.

Objective 3. Determine home range for each species of interest.

Objective 4. Monitor reproductive success and determine annual recruitment for each species of interest.

Supporting Goal 3 – Continue to enhance keystone and RTE species habitat on the installation in a manner consistent with the military mission.

Objective 1. Identify suitable habitat for each keystone and RTE species on the installation through gap analysis utilizing Geographic Information Systems (GIS) databases and field observations.

Objective 2. Determine the quantity and quality of habitat for each keystone and RTE species and identify fragmented habitat on the installation.

Objective 3. Implement management activities to create, improve, or enhance habitat for each keystone and RTE species.

Objective 4. Develop green space or travel corridors to connect fragmented habitats with other more expansive population areas.

Supporting Goal 4 – Determine impact of military mission on keystone and RTE species and habitat.

Objective 1. Identify areas of conflict in the field between keystone and RTE species and military mission locations.

Objective 2. Monitor species habitat to track degradation as a result of mission related activities.

Objective 3. Create a Terms and Conditions database to develop a comprehensive system for tracking and enforcing management requirements and mitigation measures.

Supporting Goal 5 – Continue to increase awareness and public education on the conservation of keystone and RTE species.

Objective 1. Maintain updated maps of environmental constraints, including keystone and RTE species habitat, for use by military trainers, planners, and other installation personnel.

Objective 2. Continue to conduct briefings to senior management on legal requirements to manage RTE species and on installation-specific information pertaining to these species.

Objective 3. Provide educational talks to installation organizations, youth camps, schools, and other gatherings to provide information on species known to occur on Moody AFB and on the efforts of the USAF to manage these species.

Objective 4. Continue to publicize keystone and RTE species management activities and success stories through newspaper and magazine articles, scientific meetings, and seminars.

Principal Goal II. Enhance military mission flexibility and success while maintaining and enhancing the quality of existing wetlands and watersheds.

The protection and enhancement of wetlands and watersheds on Moody AFB is of prime importance because of its geographic setting within the Grand Bay-Banks Lake (GBBL) ecosystem. The GBBL wetlands complex consists of 18,000 loosely contiguous acres, including state and Federal refuges, Moody AFB, and some private lands (National Audubon Society 2013). Approximately 50 percent of the land at Moody AFB is classified as jurisdictional or isolated wetlands. Consequently, wetlands have the potential to constrain military mission activities, including training or expansion of infrastructure. Conversely, the military mission has the potential to impact wetlands through direct conversion or storm water contamination. By maintaining and enhancing the quality of wetlands on the installation, Moody AFB would be able to leverage future military activities through mitigation of potential impacts while at the same time proactively improving the function of the wetland ecosystem.

Generally, wetlands and watershed management activities proposed for the next 4 years are based upon the following supporting goals and objectives:

Supporting Goal 1 – Maintain the current comprehensive database information on wetland and watershed locations on Moody AFB and surrounding environs.

Objective 1. Conduct a jurisdictional wetland boundary survey for Moody AFB every 5 years and update the installation GIS data layer.

Objective 2. Deploy water monitoring probes to enhance Moody AFB's water quality information on wetlands and watersheds at Moody AFB.

Objective 3. Conduct a comprehensive hydrologic study to gather baseline information on the hydrological functioning of all surface waters at Moody AFB.

Supporting Goal 2 – Continue to update qualitative data on wetlands and watersheds on Moody AFB and surrounding environs.

Objective 1. Continue to visually monitor water levels and wetlands and incorporate as appropriate into the installation GIS system.

Objective 2. Continue to update the Source Water Assessment (as needed) to determine impacts of installation activities on groundwater within the Moody AFB watersheds.

Supporting Goal 3 – Continue to restore and enhance normal hydrological functions within the GBBL ecosystem.

Objective 1. Continue to maintain water monitoring probes to enhance installation data on hydrological functions of the GBBL ecosystem.

Objective 2. Continue to coordinate with GBBL ecosystem Stewardship Council partners to monitor and alter water levels in the ecosystem as needed to restore historical water fluctuations.

Objective 3. Conduct dormant and growing season prescribed burns in the GBBL ecosystem to set back plant succession and create additional open water areas.

Principal Goal III. Maintain and enhance fish and wildlife management opportunities at Moody AFB within the context of the military mission.

Management of unimproved areas is generally focused on the protection and enhancement of keystone and RTE species within the constraints of the military mission. However, consideration of game species and management plans was modified where appropriate to improve game species populations while at the same time meeting the overall goals for mission requirements and keystone and RTE species management. The fish and wildlife management goals and objectives identified under this section is focused on game species (e.g., white-tailed deer, eastern wild turkey, small game) and game fish, and generally consists of activities related to consumptive uses of these resources (e.g., facilitation of hunts, stocking of ponds, aquatic weed management). These goals and objectives directly support the military mission by maintaining reduced populations of wildlife species near the airfield in support of the installation's Bird/Wildlife Aircraft Strike Hazard (BASH) program.

Generally, fish and wildlife management activities proposed for the next 4 years are based on the following goals and objectives:

Supporting Goal 1 – Improve recreational hunting activities on Moody AFB.

Objective 1. Conduct annual population censuses for main game species, specifically white-tailed deer and eastern wild turkeys.

Objective 2. Maintain hunting areas on Moody AFB, concentrating hunters in areas around the airfield to reduce BASH risk.

Objective 3. Continue license agreement with GDNR to facilitate wildlife management on Grand Bay Weapons Range.

Supporting Goal 2 – Improve recreational fisheries activities on Moody AFB.

Objective 1. Continue to conduct population censuses for preferred game fish in installation impoundments, as needed.

Objective 2. Continue to implement comprehensive aquatic weed control in Grassy Pond, Lot Pond, and Mission Lake (see **Figure 2-1**).

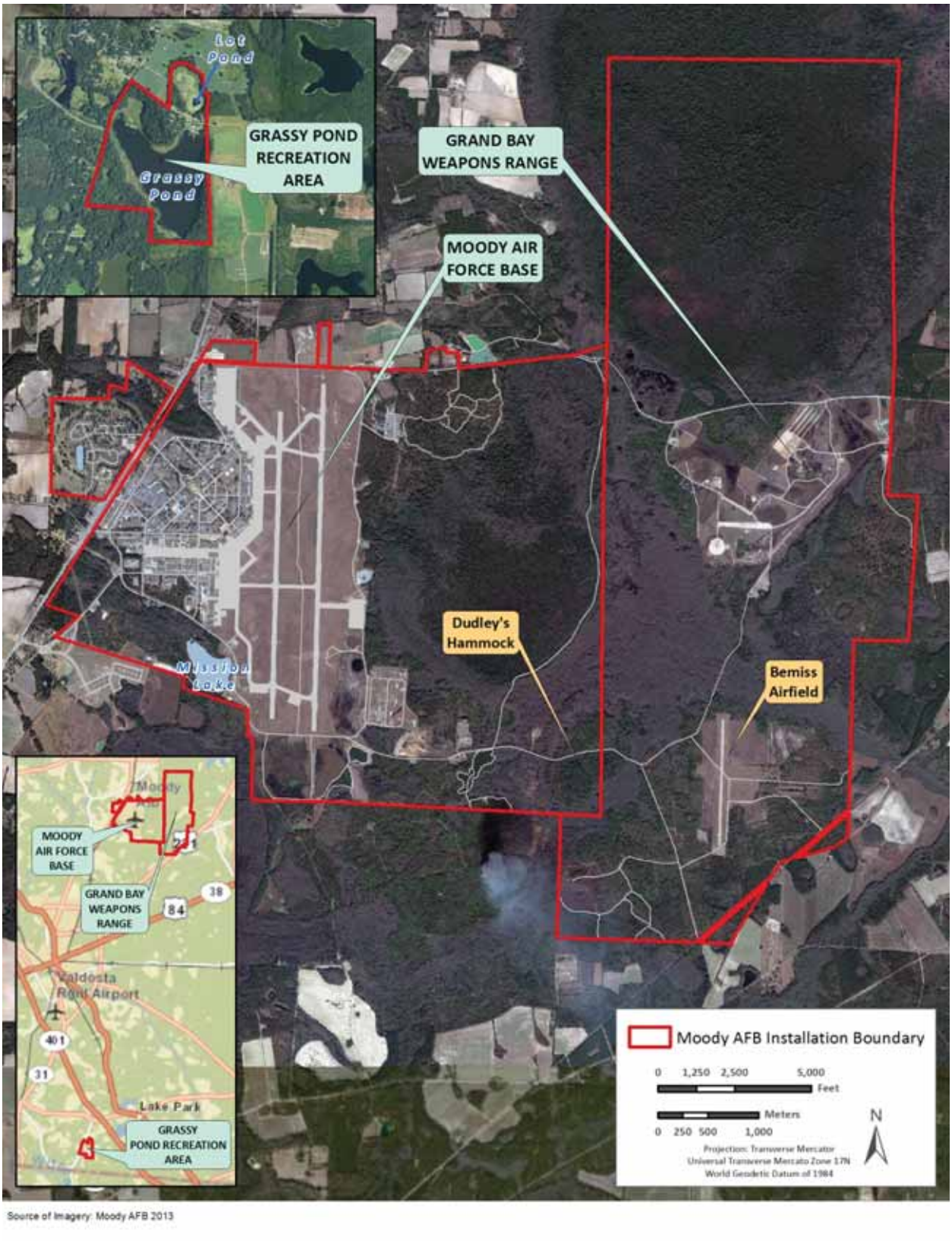


Figure 2-1. Main Base and Grassy Pond Recreational Area

Objective 3. Continue to stock game fish into installation impoundments as required based upon population data.

Objective 4. Monitor and correct water parameters in installation impoundments to determine fish-limiting factors, health hazards, and fertilization/liming needs.

Supporting Goal 3 – Continue to maintain a comprehensive database of game species populations.

Objective 1. Maintain Moody AFB's database of wildlife harvest data from previous years in tabular and spatial format.

Objective 2. Maintain Moody AFB's database of wildlife population census data in tabular and spatial format.

Objective 3. Continue to conduct gap analysis to extrapolate harvest and census data throughout installation.

Principal Goal IV. Enhance military mission flexibility and success through conducting land management and ground maintenance activities at Moody AFB.

Professional land management and grounds maintenance is required to ensure the successful completion of the military mission at Moody AFB. This includes ensuring that adequate roads and trails are available for access to military training areas and for force protection initiatives. Land management and grounds maintenance is a cross-functional program at Moody AFB. The majority of work under this program is completed by the Moody AFB grounds maintenance contractor; however, work is also completed by the Grand Bay Weapons Range contractor and the GDNR.

Generally, land management and grounds maintenance activities proposed for the next 4 years are based on the following goals and objectives:

Supporting Goal 1 – Continue to implement urban forest management to protect, maintain, and enhance the urban forest on Moody AFB.

Objective 1. Implement Moody AFB's Urban Forest Management Plan and revise as necessary.

Objective 2. Update and maintain tabular and spatial data pertaining to Moody AFB urban forest.

Objective 3. On an annual basis, provide management goals to personnel in Operations Flight for incorporation into grounds maintenance contract.

Objective 4. Ensure changes to the urban forest through planting, tree maintenance, and removals are reflected in the Moody AFB GIS system and Urban Tree Inventory System database.

Supporting Goal 2 – Continue to comply with Federal and state erosion control regulations.

Objective 1. Continue to update training for Moody AFB's staff on current Federal and state erosion control regulations and current erosion and sedimentation control techniques.

Objective 2. Continue to incorporate erosion and sedimentation control provisions into construction and land-disturbing project specifications and accompanying environmental documentation.

Supporting Goal 3 – Continue to maintain grass height on the airfield in accordance with BASH regulations.

Objective 1. Monitor grass height on the airfield to determine compliance with BASH height requirements.

Objective 2. Conduct prescribed burning on the airfield to supplement mowing and to facilitate the creation of a bahia grass monoculture.

Principal Goal V. Enhance military mission flexibility and success while maintaining and enhancing commercial forest management at Moody AFB.

The majority of the habitat types on the installation are forested, with approximately 68 percent of land comprised of either upland or wetland forests. Besides serving as military training areas, there are numerous native animals that reside within the forests, including keystone and RTE species. Thus, management of this resource is a primary component of the INRMP.

Forest management activities proposed for the next 4 years are primarily based on the following goals and objectives:

Supporting Goal 1 – Establish a balanced age class distribution of forest stands on Moody AFB (see **Figure 2-2**).

Objective 1. Update the installation forest stand map and inventory annually to reflect changes as a result of silvicultural actions.

Objective 2. Continue to plan forest harvests and silvicultural activities to obtain desired age distribution and to maintain realistic training areas.

Objective 3. Prioritize and implement silvicultural activities on the installation to meet management goals and military mission requirements.

Supporting Goal 2 – Continue to maintain and enhance forest health on Moody AFB.

Objective 1. Monitor forest stands for parasites, diseases, and invasive species and identify critical forest stands.

Objective 2. Continue to plan forest harvests and silvicultural activities to improve health and vigor of residual stands.

Objective 3. Continue to reduce and control the spread of invasive, exotic plant and animal species throughout the installation.

Objective 4. Continue chemical and mechanical treatments to control competing vegetation and meet management goals in areas unsuitable for prescribed burning.

Supporting Goal 3 – Restore historic forest composition and structure on Moody AFB.

Objective 1. Continue to maintain suitable habitat in all pine forests to enhance gopher tortoise (*Gopherus Polyphemus)* and indigo snake (*Drymarchon couperi)* habitat.

Objective 2. Ensure regeneration in understocked and older stands.

Objective 3. Continue to promote native species (longleaf, slash) in all regeneration projects and restore the longleaf pine/slash pine forest community in suitable areas.

Supporting Goal 4 – Establish priorities for prescribed burning program throughout installation.

Objective 1. Prepare and implement annual prescribed burning plans to coincide with historic fire periodicity, to include dormant and growing season burns.

Objective 2. Annually review prescribed burning notification procedures for installation and off-installation organizations.

Objective 3. Conduct educational activities (newspaper articles, briefings) to installation organizations to increase awareness of need for prescribed burning and compatibility with military mission.

Supporting Goal 5 – Continue to integrate commercial forest activities with military mission.

Objective 1. Determine maximum heights related to glide slopes and other areas adjacent to Moody AFB airfield and proactively manage forests in this area to minimize impacts to the flying mission.

Objective 2. Investigate feasibility of converting clearcut/oldfield areas to short rotation pine plantations in areas adjacent to the airfield.

Objective 3. Maintain a complex mosaic of forest stands in a variety of successional stages through the professional application of silvicultural techniques to provide realistic military training areas.

Principal Goal VI. Utilize ecosystem and biodiversity management principles at Moody AFB to integrate the conservation of the natural infrastructure with military mission needs.

This natural resources management plan was integrated into an overall ecosystem management plan for the GBBL ecosystem. Primarily, the focus of ecosystem management is the restoration of natural community processes in each of the identifiable and distinct ecosystems. Establishing ecosystem processes would result in the availability of realistic training areas capable of withstanding training pressure without degradation or decreases in quality, quantity, or function.

Generally, overall ecosystem management activities proposed for the next 4 years are based on the following underlying goals and objectives:

Supporting Goal 1 – Continue to maintain comprehensive database of ecological information from Moody AFB and the GBBL ecosystem.

Objective 1. Continue to conduct field surveys to identify habitats within the Moody AFB and GBBL ecosystem boundary.

Objective 2. Continue to classify and quantify faunal and floral communities within these ecosystems.

Supporting Goal 2 – Continue to implement management techniques to mimic historic natural ecological disturbances and practices to restore community integrity and function.

Objective 1. Continue to conduct prescribed burning in the GBBL ecosystem in accordance with historic fire periodicity, to include dormant and growing season burns.

Objective 2. Continue to alter water levels throughout the ecosystems in cooperation with GBBL Council members, as needed.

Objective 3. Utilize keystone and RTE species as indicators of ecosystem health and focus management practices on these species.

Objective 4. Continue to monitor ecological components of ecosystems to determine adaptive management activities.

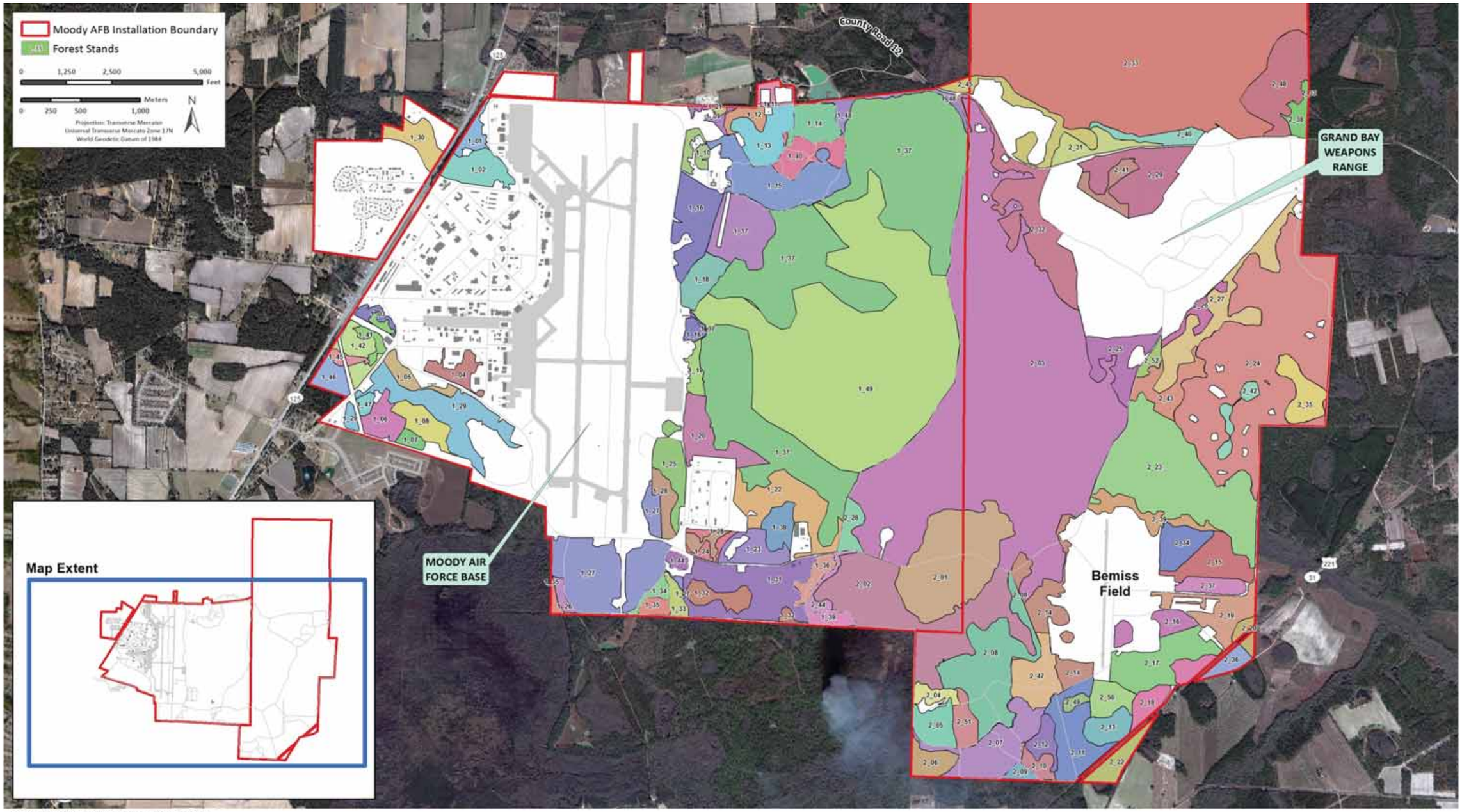


Figure 2-2. Forest Stands at Moody AFB

Supporting Goal 3 – Continue to increase awareness and public education of the native ecosystems on Moody AFB.

Objective 1. Continue to work with local media to circulate news releases and public briefings on the GBBL ecosystem.

Objective 2. Conduct field trips with local schools and groups to natural areas on Moody AFB and within the GBBL ecosystem.

Objective 3. Continue to support and participate in other regional ecosystem initiatives, such as the Upper Suwannee River Watershed Initiative.

Objective 4. Update the brochure on Moody AFB natural resources stewardship programs and create a brochure to publicize activities conducted within the GBBL ecosystem.

Objective 5. Continue to engage stakeholders in the GBBL ecosystem and encourage greater participation by private landowners and other stakeholders in the management and conservation of the GBBL ecosystem.

2.1.2 Proposed Projects

Table 2-1 identifies the proposed projects listed in the updated INRMP that are designed to meet the goals and objectives listed in **Section 2.1.1**.

2.2 Selection Standards

In the initial screening of potential alternatives for the Moody AFB INRMP, the USAF took into consideration minimum selection standards in consultation with the USFWS and the GDNR. The minimum selection standards for the INRMP considered for implementation are listed below:

1. Promote the enhancement and sustainment of the military mission within the natural infrastructure of Moody AFB by providing realistic training areas with no net loss in the capability of military lands to support the military mission.
2. Maintain viable populations of native species, especially keystone and rare species, on Moody AFB.
3. Restore and maintain ecological processes of native ecosystems located on Moody AFB, including the wetland complex within the GBBL ecosystem.
4. Maintain a dynamic mosaic of wetland habitat types on Moody AFB.
5. Sustain other human uses and occupancy within the ecosystem without long-term environmental degradation.
6. Proactively manage RTE species to ensure regulatory compliance with the Endangered Species Act.
7. Meet the regulatory requirements of The Sikes Act and DOD/USAF directives and instructions.

2.3 Alternatives Considered but Eliminated from Detailed Analysis

Under NEPA, reasonable alternatives must be considered in the EA. Considering alternatives helps to avoid unnecessary impacts and allows an analysis of reasonable ways to achieve the proposed action and satisfy the stated purpose and need. A reasonable alternative must be capable of implementation and meet the selection standards.

During the development of the Moody AFB INRMP, the installation consulted with natural resources professionals at the USFWS, GDNR, and The Nature Conservancy to formulate specific goals and objectives for the conservation and protection of natural resources on the installation. Following the development of goals and objectives, various natural resources management activities that could be implemented to meet these goals and objectives were discussed and analyzed, which lead to the development of a specific list of projects that would be carried forward in the INRMP as the best alternative to conserve and rehabilitate natural resources at Moody AFB within the military mission context. Other alternatives considered during INRMP development either did not meet the goals or were considered ineffective, removed from the INRMP, and eliminated from further detailed analysis. The draft INRMP with the vetted alternatives was presented to the public for review and comment prior to final acceptance and approval of the INRMP by the Air Force, the USFWS, and GDNR.

Implementation of the final approved INRMP is required per the statutory provisions of the Sikes Act (16 USC 670 et seq) and Air Force Instruction 32-7064, Integrated Natural Resources Management. As such, the Proposed Action for this assessment consists of the implementation of the natural resources activities outlined in the INRMP (listed in Table 2-1 in order of priority and schedule). The only other alternative to the Proposed Action is the No-Action Alternative, which will be carried forward for further analysis.

2.4 No Action Alternative

Under the No Action Alternative, management of natural resources would continue as characterized in the Moody AFB 2007 INRMP, which contained management activities for FY 2008–2012. Other management plans, normally integrated into the INRMP but remaining outside of the 2007 INRMP, would not be incorporated under the No Action Alternative. This alternative is carried forward for analysis as a baseline against which the impacts of the Proposed Action and the potential action alternatives can be evaluated.

2.5 Summary of Environmental Impacts

Table 2-2 provides an overview of potential impacts associated with the Proposed Action and the No Action Alternative broken down by resource area. **Section 4** of this EA addresses these impacts in more detail.

Table 2-1. Proposed Natural Resources Projects Identified for Implementation (FY 2015–2018)

Project #	FY	Description/Status	INRMP Goals*		Legal Policy**	Priority for Implementation
			PG	SG		
1	Recurring Projects (FY15-FY18)	Gopher Tortoise Demographic Study	I	2	ESA, FWCA†	1
2		Gopher Tortoise Disease Study	I	2		
3		Gopher Tortoise Movement Study	I	2		
4		Bald Eagle Nest Monitoring	I	2	BGEPA, MBTA, EO 13186, FWCA†	11
5		Natural Resources Program Outreach	I VI	5 3	†	12
6		Surveys for Newly Listed Species	I	1	ESA, FWCA†	13
7		Records Management and GIS Data Entry	I II III IV V VI	1, 4 1, 2 3 1 1 1	†	7
8		Prescribed Burning	IV V VI	3 2, 4 2	MBTA, EO 13186, FWCA†	2
9		Continue to Implement Wetlands Monitoring Plan	II VI	1, 2, 3 2	CWA, MBTA, EO 13186, EO 11990†	8
10		Maintain License Agreement with GDNR for Grand Bay WMA	III	1	†	3
11		Purchase and Maintain Hunting Stands	III	1	†	14
12		Wildlife Population Surveys	I III	1, 2, 4, 1	FWCA, MBTA, EO 13186†	16
13		Aquatic Weed Control	III	2	FNWA, CWA, EO 13112 †	16
14		Urban Forest Management	IV V	1 1, 2	†	9
15		Remove Hazard Trees in Urban Settings	IV	1	†	10
16		Urban Forest Data Maintenance	IV	1	†	15
17		Airfield Burning:	IV V	3 4	AFI 91-202, MBTA, EO 13186†	4
18		Monitoring of Dudley's Hammock	I VI	3, 4 1, 2	†	17
19		Exotic Invasive Species Control	III V	2 2	FNWA, CWA, EO 13112 †	6

Project #	FY	Description/Status	INRMP Goals*		Legal Policy**	Priority for Implementation
			PG	SG		
20	FY15	Seed Tree Regeneration Harvest, Stand 2-08 (42+ ac)	V	1 – 5	†	1
21		Hardwood Midstory Control (Chemical), Stand 2-08 (68+ ac) FY14: Partially Completed (Sprayed 47 acres as part of larger contract); Remaining 21 acres scheduled to be completed in FY15	V	1 – 5	†	3
22		Hardwood Midstory Control (Mechanical), Stand 2-11 (47+ ac) FY14: Partially Completed (19 ac completed as part of larger project); Remaining 27 ac scheduled to be completed in FY15	V	1 – 5	†	2
23		Timber Thinning Sale, Stands 2-19 and east 2-37 (35+ ac)	V	1 – 5	†	4
24		Clearcut, Site Preparation, and Planting of Longleaf Pine, Stands 2-10 & east 2-07 (16+ ac)	V	1 – 5	†	5
25		Hardwood Midstory Control (Chemical), 2-07 (12+ ac), 1-31 (38+ ac), and eastern portion of 2-16 (13+ ac)	V	1 – 5	†	6
26		Hardwood Midstory Control (Mechanical), 2-16 (12 ac), 2-17 (30 ac), 2-24 (21 ac), 2-08 (9 ac), and 2-18 (6 ac)	V	1-5	†	7
27		Hardwood Midstory Control (Chemical), 2-19 (13 ac), 1-20 (9 ac), 1-15 (30 ac), 1-17 (20 ac), and 1-18 (11 ac)	V	1-5	†	7
28		Invasive Species Survey and Control -- Survey of invasive species on 380 ac and mechanical control (mastication) of Chinese privet in selected areas in stands 1-30, 1-05, 1-29, and 1-48 (40 ac)	V	1 – 5	†	1
29		Thinning Timber Sale, 2-08 (24+ ac), and 2-24 (30+ ac)	V	1 – 5	†	1
30	FY16	Clearcut, Site Preparation, and Planting of Slash Pine, Stands 2-08 and 2-07 (20+ ac)	V	1 – 5	†	2
31		Timber Thinning, Stands 1-18 (26+- ac) and 1-16 (39+ ac) FY14: Partially completed (Stand 1-18 thinned; 4 ac of 1-16 thinned); Remaining 34 ac of stand 1-16 scheduled for FY16 FY15: Not Scheduled for Action FY16: Scheduled remaining 34 ac of stand 1-16	V	1 – 5	†	1
32		Hardwood Midstory Control (Chemical), Stand 2-11 (47+ ac) FY14: Partially completed (15 ac sprayed); Adjusted remaining acreage to 15 ac scheduled to be sprayed in FY16 FY15: Not Scheduled for Action FY16: Scheduled remaining 15 acres for spraying	V	1 – 5	†	3
33		Site preparation and planting of Longleaf Pine, Stand 1-23 (12 ac) NOTE: Project can only be accomplished if environmental restoration of MMRP site is completed	V	1-5	†	3
34	FY17	Seed Tree Regeneration Harvest, Stand 1-15 (46+ ac)	V	1 – 5	†	1
35	FY18	Clearcut, mechanical site preparation, and planting of Longleaf Pine, East side of Stand 2-24 (20 ac)	V	1 – 5	†	1
36		Seed Tree Regeneration Cut, Stand 2-07 (16 ac)	V	1 – 5	†	1

Source: Moody AFB 2014. Notes: *Refer to Chapter 8 for details on INRMP goals and objectives. PG = Principal Goal; SG = Supporting Goal.

†AFI 32-7064, DOD Directive 4700.4, and SAIA provide legal policy and guidance for all proposed natural resource projects. BGEPA = Bald and Golden Eagle Protection Act; CWA = Clean Water Act; FNWA = Federal Noxious Weed Act; FWCA = Fish and Wildlife Coordination Act; WMA=Wildlife Management Area.

Table 2-2 Summary of Environmental Impacts

Resource Area	Proposed Action	No Action Alternative
Air Quality	Short-term, minor, adverse impacts on air quality would result; these impacts would not be significant. Prescribed burns would generate emissions of criteria pollutants directly from the combustion of vegetation. The estimated annual air emissions from the timber harvest and vegetation control projects are not expected to trigger any air quality thresholds of significance. Moody AFB is in attainment/ unclassifiable for all criteria pollutants.	Air emissions would continue to be generated in a manner identical to existing conditions; no impacts would be expected.
Geology and Soils	Short-term, minor, adverse impacts and long-term beneficial impacts on soil resources could occur; these impacts would not be significant. Implementation of certain projects (e.g., clearcuts and prescribed burning) may temporarily expose soils to erosion. By implementing an effective soil erosion and sedimentation program, impacts on geology and soils would be minimized. In the long term, implementation of the INRMP would increase soil stabilization.	Long-term, minor, adverse impacts would be expected. By failing to implement a more effective soil erosion and sedimentation program, impacts on geology and soils associated with erosion and sedimentation at Moody AFB would be expected to continue.
Water Resources	Short-term, minor, adverse impacts and long-term beneficial impacts on water resources could occur; these impacts would not be significant. Long-term, beneficial impacts would be expected from the reduction of soil erosion and aquatic weed control. Moody AFB would continue to implement the wetland monitoring plan. Monitoring of the water quality in the wetlands would continue to determine if the plans and practices being implemented are sufficient to prevent degradation to the system. No effects on floodplains would be expected.	Long-term, minor, adverse impacts on water resources would be expected to continue. This Alternative does not provide a formal plan of action for maintaining and updating the database on wetland and watershed locations. This would result in outdated water quality data, GIS layers, and expired Jurisdictional Determinations for previously delineated wetlands.

Resource Area	Proposed Action	No Action Alternative
Biological Resources	Short-term, minor, adverse impacts on biological resources could occur from land-disturbing activities; these impacts would not be significant. Long-term, beneficial impacts would be expected from the habitat improvement projects and species inventories. Projects including the control of mid-story hardwoods, restoration of native pine forests, and selective thinning would result in short-term disturbances but long-term beneficial impacts on the habitat for wildlife and protected species. Several projects include conducting surveys or studies of Moody AFB's protected species (e.g., gopher tortoise, bald eagle, and newly listed species) and habitat. Implementation of routine assessment and monitoring for these special status species provides a baseline of data that could be used to prioritize projects and identify the most efficient allocation of resources. Consequently, no significant impacts to biological resources would occur as a result of the Proposed Action.	Long-term, minor, adverse impacts on biological resources would be expected to continue. The No Action Alternative does not provide for the formal implementation of an updated habitat assessment and monitoring program for RTE species and wildlife populations. In addition, the No Action Alternative does not establish forest management measures to protect and enhance native habitats by preventing or minimizing potential impacts of mid-story hardwood competition and invasive species encroachment. This would result in the continuing decline in the quality and complexity of the habitats on Moody AFB.
Safety	No significant impacts to safety would occur. The Proposed Action would involve projects that have been completed before (e.g., demographic studies and wetlands monitoring plans) and projects that would be similar to those previously implemented. Activities would be completed in accordance with applicable USAF safety regulations and USAF Occupational Safety and Health Administration requirements. There are numerous projects that would have a beneficial impact on Bird/Wildlife Aircraft Strike Hazard including prescribed burning, hardwood mid-story control, and timber thinning. Tree regeneration projects would be balanced with tree trimming and reduction.	Long-term, minor, adverse impacts would be expected. A wildfire burning out of control is more dangerous than prescribed fires. Additionally, management measures to reduce BASH risk would not be implemented, thereby resulting in an increase in strike hazards near the airfield.
Cultural Resources	No significant impacts to cultural resources would occur. Natural resources management activities would be coordinated with the installation archaeologist to minimize potential impacts to installation cultural resources. American Indian tribes with ties to the area were consulted throughout the preparation of the EA and given the opportunity to alert the USAF to the location of traditional cultural properties that may be affected by the Proposed Action.	No impacts would be expected.

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3. Description of the Affected Environment

This section addresses the environmental resources and conditions most likely to be affected by the Proposed Action and No Action Alternative. It provides sources of information to serve as a baseline from which to identify and evaluate potential environmental consequences that could result from implementation of those alternatives. The affected environment within Moody AFB and the surrounding area is described in detail in the INRMP, which is available for review. Therefore, that information, which can be used as a baseline for identifying potential impacts of the alternatives, is not repeated in this EA and is incorporated by reference.

All potentially relevant environmental resource areas were initially considered for analysis in this EA. In compliance with NEPA, CEQ, and 32 CFR Part 989 regulations, the discussion of the affected environment and environmental consequences focuses only on those resource areas potentially subject to impacts and those with potentially significant environmental issues. Therefore, the following resources areas have been omitted from detailed analysis.

Infrastructure, Utilities, and Transportation. The actions identified in the INRMP would not require construction of facilities, result in an increase in personnel (which could affect road systems or utility use), or require any alteration to existing runways. The actions are limited to the unimproved areas of the installation; therefore, utilities would not be impacted. As a result, infrastructure, utilities, and transportation are eliminated from further analysis.

Hazardous Materials and Wastes. Hazardous materials and wastes would not be generated through the actions identified in the INRMP. Land management activities would be coordinated with the Environmental Restoration Program (ERP) manager to ensure no impacts to wells or other ERP activities would occur. A discussion of Military Munitions Response Program (MMRP) sites near the Proposed Action are discussed in **Section 3.5.2**. Therefore, hazardous materials and wastes are eliminated from further analysis.

Land Use. The actions identified in the INRMP are limited to the unimproved areas of the installation; there would be no land use changes on or off the installation as a result of proposed activities. As a result, land use is eliminated from further analysis.

Noise. Noise levels associated with activities in the INRMP would be nominal. Activities associated with these actions would involve the occasional use of heavy equipment for forestry and wildland fire management activities. These types of equipment are already in use and there would be no change from baseline conditions. As a result, noise is eliminated from further analysis.

Socioeconomics and Environmental Justice. Activities considered in the INRMP are within the boundaries of Moody AFB and would not result in a change in population levels, employment rates, cost of housing, income levels, or change characteristics in race or ethnicity. The use of contractors to implement some of the activities in the INRMP would be minor. As a result, socioeconomics and environmental justice is eliminated from further analysis.

3.1 Air Quality

3.1.1 Definition of Resource

Air quality is measured by the concentration of criteria pollutants in the atmosphere. The air quality in a region is a result not only of the types and quantities of atmospheric pollutants and pollutant sources in an area, but also surface topography, the size of the topological "air basin," and the prevailing meteorological conditions in that region.

National Ambient Air Quality Standards (NAAQS). The Clean Air Act, as amended, requires the U.S. Environmental Protection Agency (USEPA) to set NAAQS for pollutants considered harmful to public health and the environment. The USEPA characterizes ambient air quality in terms of compliance with the primary and secondary NAAQS. Primary NAAQS provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary NAAQS provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

The USEPA has established NAAQS for six criteria pollutants:

- Carbon monoxide (CO)
- Lead (Pb)
- Nitrogen dioxide (NO_2)
- Ozone (O_3), which is measured as nitrogen oxides [NO_x] and volatile organic compounds [VOC]
- Sulfur dioxide (SO_2)
- Particulate matter (with an aerodynamic size less than or equal to 10 microns [PM_{10}] and with an aerodynamic size less than or equal to 2.5 microns [$PM_{2.5}$]).

States may either adopt the NAAQS or establish their own more stringent standards. **Table 3-1** provides the primary and secondary NAAQS and Georgia ambient air quality standards.

Attainment Versus Nonattainment and General Conformity. The USEPA classifies the air quality in a region according to whether the concentrations of criteria pollutants in ambient air exceed the NAAQS. Areas are therefore designated as either "attainment," "nonattainment," "maintenance," or "unclassified" for each of the six criteria pollutants. Attainment means that the air quality is better than the NAAQS; nonattainment indicates that criteria pollutant levels exceed NAAQS; maintenance indicates that an area previously designated nonattainment is now in attainment but subject to regulations to ensure it does not return to nonattainment; and an unclassified air quality designation means that there is not enough information to appropriately classify an area, so the area is considered in attainment.

3.1.2 Existing Conditions

Moody AFB is in Lowndes and Lanier counties, which are designated attainment/unclassifiable for all criteria pollutants (USEPA 2014). Because the General Conformity Rule applies only to significant Federal actions in nonattainment or maintenance areas, it is not applicable to this air quality analysis. Therefore, neither an applicability analysis nor a conformity determination is required.

Table 3-2 summarizes the latest and most comprehensive regional emissions inventory (stationary and mobile) for criteria pollutants and O_3 precursor emissions in Lanier and Lowndes counties.

Greenhouse Gas Emissions. Greenhouse Gases (GHGs) are gaseous emissions that trap heat in the atmosphere. These emissions occur from natural processes and human activities. Human-caused GHGs are produced primarily by the burning of fossil fuels and through industrial and biological processes. The most common GHGs emitted from human activities include carbon dioxide (CO_2), methane, and nitrous oxide; however, because CO_2 emissions account for approximately 85 to 90 percent of all energy-related GHG emissions in the United States, they are used for analyses of GHG emissions in this assessment. The U.S. Department of Energy, Energy Information Administration estimates that 2011 gross CO_2 emissions in Georgia and the United States were 154 million metric tons and 5,384 million metric tons, respectively (U.S. EIA 2014).

Table 3-1. National and Georgia Ambient Air Quality Standards

Pollutant	Averaging Time	Primary Standard		Secondary Standard
		Federal	State	
CO	8-hour (1)	9 ppm (10 mg/m^3)	Same as Federal	None
	1-hour (1)	35 ppm (40 mg/m^3)	Same as Federal	None
Pb	Rolling 3-Month Average (2)	0.15 µg/m^3 (3)	Same as Federal	Same as Primary
NO_2	Annual (4)	53 ppb (5)	Same as Federal	Same as Primary
	1-hour (6)	100 ppb	Same as Federal	None
PM_{10}	24-hour (7)	150 µg/m^3	Same as Federal	Same as Primary
$PM_{2.5}$	Annual (8)	12 µg/m3	15 µg/m^3	15 µg/m^3
	24-hour (6)	35 µg/m3	Same as Federal	Same as Primary
O_3	8-hour (9)	0.075 ppm (10)	Same as Federal	Same as Primary
SO_2	1-hour (11)	75 ppb (12)	Same as Federal	None
	Annual	None	80 µg/m^3	None
	3-hour (1)	None	1,300 µg/m^3	0.5 ppm
	24-hour block	None	365 µg/m^3	None

Sources: USEPA 2011a and GDNR 2013

Notes: Parenthetical values are approximate equivalent concentrations.

1. Not to be exceeded more than once per year.
2. Not to be exceeded.
3. Final rule signed 15 October 2008. The 1978 standard for Pb (1.5 µg/m^3 as a quarterly average) remains in effect until 1 year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved. The USEPA designated areas for the new 2008 standard on 8 November 2011.
4. Annual mean.
5. The official level of the annual NO_2 standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of cleaner comparison to the 1-hour standard.
6. 98th percentile, averaged over 3 years.
7. Not to be exceeded more than once per year on average over 3 years.
8. Annual mean, averaged over 3 years.
9. Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years.
10. Final rule signed 12 March 2008. The 1997 O_3 standard (0.08 ppm, annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years) and related implementation rules remain in place. In 1997, USEPA revoked the 1-hour O_3 standard (0.12 ppm, not to be exceeded more than once per year) in all areas, although some areas have continued obligations under that standard ("anti-backsliding"). The 1-hour O_3 standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is less than or equal to 1.
11. 99th percentile of 1-hour daily maximum concentrations, averaged over 3 years.
12. Final rule signed 2 June 2010. The 1971 annual (0.3 ppm) and 24-hour (0.14 ppm) SO_2 standards were revoked in that same rulemaking. However, these standards remain in effect until 1 year after an area is designated for the 2010 standard, except in areas designated nonattainment for the 1971 standards, where the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standard are approved.

Key: ppm = parts per million; ppb = parts per billion; mg/m^3 = milligrams per cubic meter; µg/m^3 = micrograms per cubic meter

Table 3-2. Regional Baseline Emissions for Lanier and Lowndes Counties

Location	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Lanier County (2011)	481	13,557	5,931	22	2,266	651
Lowndes County (2011)	6,476	25,765	33,591	784	8,746	2,367

Source: USEPA 2011b

3.2 Geology and Soils

3.2.1 Definition of Resource

Geological resources consist of the Earth's surface and subsurface materials. Within a given physiographic province, these resources typically are described in terms of topography and physiography, geology, and soils. Topography and physiography pertain to the general shape and arrangement of a land surface, including its height and the position of its natural and human-made features. Geology is the study of the Earth's composition and provides information on the structure and configuration of surface and subsurface features. Such information derives from field analysis based on observations of the surface and borings to identify subsurface composition. Soils are the unconsolidated materials overlying bedrock or other parent material. Soils typically are described in terms of their complex type, slope, and physical characteristics. Differences among soil types in terms of their structure, elasticity, strength, shrink-swell potential, and erosion potential affect their abilities to support certain applications or uses. In appropriate cases, soil properties must be examined for their compatibility with particular construction activities or types of land use.

3.2.2 Existing Conditions

Geology. Moody AFB is within the Tifton Upland District of the Atlantic Coastal Plain physiographic province. The underlying geology consists of the Hawthorn Formation that overlies the Tampa Formation. The Hawthorn Formation averages 150 feet in thickness and is phosphatic in composition (Stevens 1979; U.S. Geological Survey [USGS] 2014). The underlying Tampa Formation is composed of limestone that can be seen in outcrops along the Withlacoochee River (Stevens 1979; USGS 2014). Lowndes County is a karst region, having abundant sinkholes and sinkhole lakes that have formed where the aquifer crops out and the overlying confining unit has been removed by erosion (Krause 1979; Leeth et al. 2001). These are a result of groundwater dissolving the high calcium carbonate content of the underlying limestone formations. The region is considered a medium hazard area for aquifer vulnerability, because of the moderately shallow depth to water and moderately high recharge movement and low containment rate.

Soils. In general, soils on uplands in this region were formed in deep sedimentary sands and clays. Alluvial soils near streams and tributaries generally originated from material eroded from the uplands. Based on the U.S. Department of Agriculture, Natural Resources Conservation Service soil surveys of the counties in which Moody AFB is located, the predominant soil associations on the installation are shown in **Figure 3-1** and discussed below (USDA-NRCS 2014).

Tifton-Pelham-Fuquay. This association consists of nearly level and gently sloping soils on ridge tops, hillsides, and in drainage ways that dissect the ridges. The ridges are typically less than 1 mile wide, and the drainage ways range from about 50 to 250 feet wide. This association makes up about 36 percent of the soils in Lowndes County. Tifton soils make up about 49 percent of the association, Pelham soils about 16 percent, the Fuquay soils about 8 percent, and the minor soils about 27 percent.

Tifton and Fuquay soils are generally located along the ridges, and Pelham soils are in drainage ways and intermittently ponded depressions.

- Tifton soils are well drained and nearly level or very gently sloping. Typically, the surface layer is brown loamy sand about 8 inches thick. The subsoil is sandy-clay loam and extends to a depth of 60 inches or more.

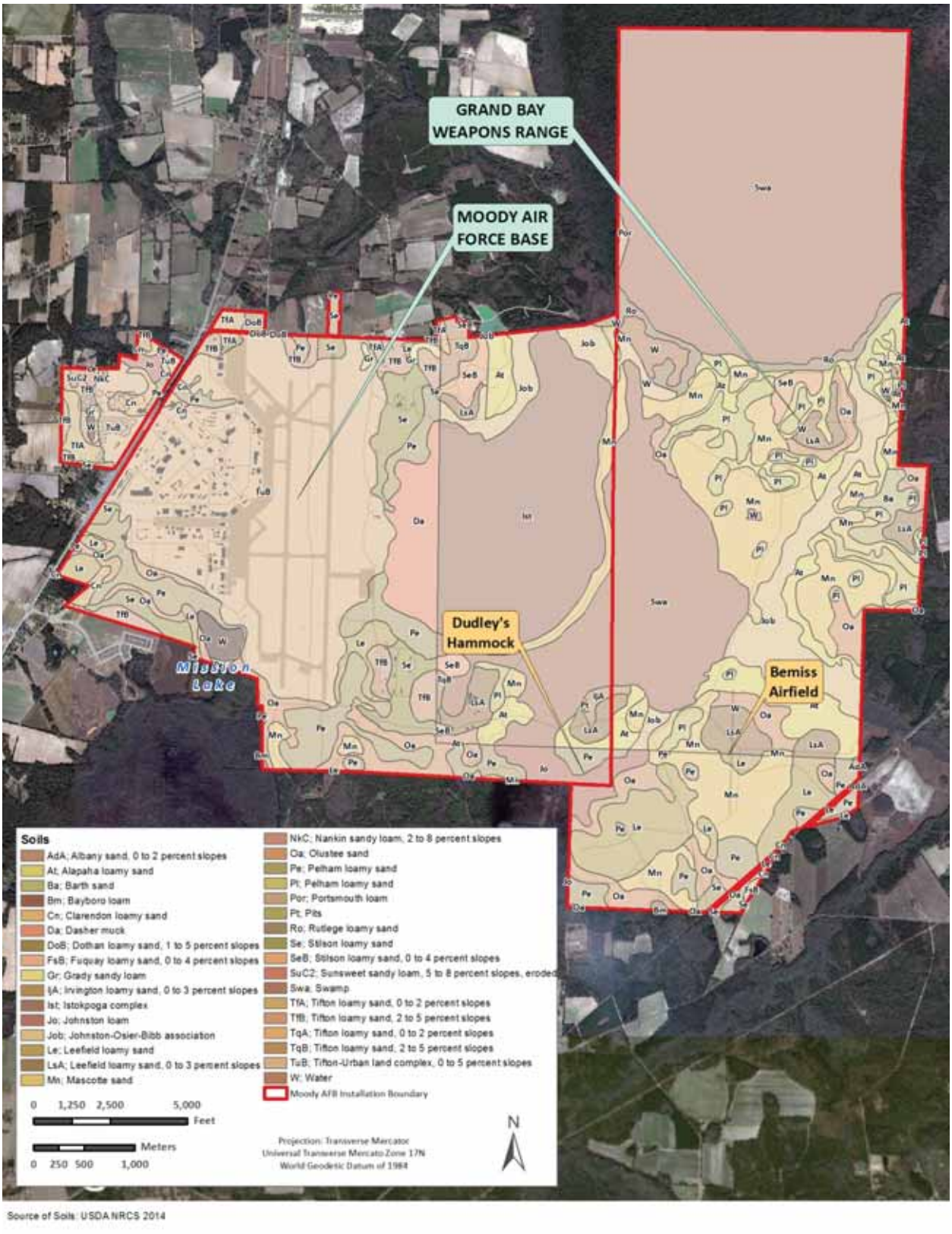


Figure 3-1. Predominant Soil Associations on Moody AFB

- Pelham soils are poorly drained and nearly level. Typically, the surface layer is black loamy sand about 8 inches thick. The subsurface layer is gray loamy sand about 17 inches thick. The subsoil extends to a depth of 65 inches or more.
- Fuquay soils are well drained and nearly level or very gently sloping. Typically, the surface layer is dark grayish-brown loamy sand about 7 inches thick. The subsurface layer is light yellowish-brown loamy sand about 14 inches thick. The subsoil is dominantly sandy-clay loam and extends to a depth of 60 inches or more.

Minor soils in this association are the well-drained Dothan, Nankin, and Sunsweet soils and the moderately well-drained Stilson soils. Dothan, Nankin, and Sunsweet soils are on ridges and hillsides, as are Tifton and Fuquay soils, and the more sloping Sunsweet soils are on short hillsides. Stilson soils occur on low uplands.

Most of the cultivated land in Lowndes County is on Tifton and Fuquay soils. Corn, tobacco, soybeans, cotton, and peanuts are the major agricultural crops. Also, some areas are used for permanent pasture. The main concern of management is control of erosion on the gently sloping soils. Pelham soils are used mainly for producing timber, but some areas are in pasture. This association generally has slight limitations for most non-farm uses, but because of wetness and flooding, Pelham soils are severely limited for crop production.

Dasher or Swamp-Istokpoga. These soils are characteristic of swampy areas and level, very poorly drained organic soils in flooded areas.

Mascotte-Albany-Pelham. These soils have a sandy surface layer and loamy or sandy subsoil and are found on flats and in depressions and drainages.

Leefield-Pelham-Clarendon. These soils have a sandy surface layer and loamy subsoil and are found on low uplands and in depressions.

3.3 Water Resources

3.3.1 Definition of Resource

Water resources are natural and man-made sources of water that are available for use by and for the benefit of humans and the environment. Water resources relevant to Moody AFB's location in Georgia include groundwater, surface water, wetlands, and floodplains. Evaluation of water resources examines the quantity and quality of the resource and its demand for various purposes.

Groundwater. Groundwater is water that exists in the saturated zone beneath the earth's surface, and includes underground streams and aquifers. It is an essential resource that functions to recharge surface water and is used for drinking, irrigation, and industrial processes. Groundwater typically can be described in terms of depth from the surface, aquifer or well capacity, water quality, recharge rate, and surrounding geologic formations. Groundwater quality and quantity are regulated under several statutes and regulations (see **Appendix A**). The Federal Underground Injection Control regulations, authorized under the Safe Drinking Water Act (SDWA), require a permit for the discharge or disposal of fluids into a well. The Federal Sole Source Aquifer regulations, also authorized under the SDWA, protect aquifers that are critical to water supply.

Surface Water. Surface water resources generally consist of wetlands, lakes, rivers, and streams. Surface water is important for its contribution to the economic, ecological, recreational, and human health of a community or locale. Wetlands are discussed as a separate subheading below.

Waters of the United States are defined within the Clean Water Act (CWA), as amended, and are regulated by the USEPA and the U.S. Army Corps of Engineers (USACE). The CWA mandates the National Pollutant Discharge Elimination System program, which requires a permit for any discharge of pollutants into waters of the United States. Construction activities, such as clearing, grading, trenching, and excavating, would disturb soils and sediment. If not managed properly, disturbed soils and sediments can easily be washed into nearby water bodies during storm events resulting in reduced water quality. The USEPA regulates large and small (greater than 1 acre) construction activities through the 2012 Construction General Permit (USEPA 2012). Permittees must select, install, and maintain effective erosion- and sedimentation-control measures as identified and as necessary to comply with the 2012 Construction General Permit.

Storm water is an important component of surface water systems because of its potential to introduce sediments and other contaminates that could degrade surface waters. Proper management of storm water flows, which can be intensified by high proportions of impervious surfaces associated with buildings, roads, and parking lots, is important to the management of surface water quality and natural flow characteristics. Prolonged increases in storm water volume and velocity associated with development and increased impervious surfaces have potential to impact adjacent streams as a result of stream bank erosion and channel widening or down cutting associated with the adjustment of the stream to the change in flow characteristics. Storm water management systems are typically designed to contain runoff on site during construction, and to maintain predevelopment storm water flow characteristics following development through either the application of infiltration or retention practices. Failure to size storm water systems appropriately to hold or delay conveyance of the largest predicted precipitation event often leads to downstream flooding and the environmental and economic damages associated with flooding.

Section 438 of the Energy Independence and Security Act (42 U.S.C. 17094) establishes into law new storm water design requirements for Federal construction projects that disturb a footprint of greater than 5,000 ft^2 of land. Energy Independence and Security Act Section 438 requirements are independent of storm water requirements under the CWA. Under these requirements, predevelopment site hydrology must be maintained or restored to the maximum extent technically feasible with respect to temperature, rate, volume, and duration of flow. Predevelopment hydrology shall be modeled or calculated using recognized tools and must include site-specific factors such as soil type, ground cover, and ground slope. Site design shall incorporate storm water detention and reuse technologies such as bioretention areas, permeable pavements, cisterns/recycling, and green roofs to the maximum extent technically feasible (USEPA 2009).

Wetlands. Wetlands perform several hydrologic functions; including water quality improvement, groundwater recharge and discharge, pollution mitigation, nutrient cycling, storm water attenuation and storage, sediment detention, and erosion protection. Wetlands are protected as a subset of the waters of the United States under Section 404 of the CWA. The term "waters of the United States" has a broad meaning under the CWA and incorporates deepwater aquatic habitats and special aquatic habitats (including wetlands). The USACE defines wetlands as "those areas that are inundated or saturated with ground or surface water at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (33 CFR Part 329). For regulatory purposes, wetlands are defined by three factors: hydrologic regime, soil characteristics, and vegetation. In addition, many states have local regulations governing wetlands and their buffer areas. Wetland habitats are discussed further in **Section 3.4**, Biological Resources.

Floodplains. Floodplains are areas of low-level ground present along rivers, stream channels, or coastal waters that are subject to periodic or infrequent inundation due to rain or melting snow. Floodplain ecosystem functions include natural moderation of floods, flood storage and conveyance, groundwater recharge, nutrient cycling, water quality maintenance, and habitat for a diversity of plants and animals.

Flood potential is evaluated by the Federal Emergency Management Agency, which defines the 100-year floodplain as an area within which there is a 1 percent chance of inundation by a flood event in a given year. Risk of flooding is influenced by local topography, the frequency of precipitation events, the size of the watershed above the floodplain, and upstream development. Federal, state, and local regulations often limit floodplain development to passive uses, such as recreational and preservation activities, to reduce the risks to human health and safety. EO 11988, *Floodplain Management*, directs Federal agencies to avoid siting within floodplains unless the agency determines that there is no practicable alternative.

3.3.2 Existing Conditions

Groundwater. Groundwater occurs within two major water-bearing zones, the surficial aquifer system and the Floridan aquifer system. Although groundwater is generally 10 to 20 feet below the ground surface, the main waterbearing formation underlying Moody AFB is an artesian aquifer containing naturally high concentrations of sulfate, hydrogen sulfide, and iron. The water quality is attributable to the presence of the sulfate minerals gypsum and celestite in the host rock.

The surficial aquifer is composed of fine to coarse sands, gravels, silt, clayey silts, and clays. Water quality is generally good, and yields are usually less than 50 gallons per minute. The Floridan aquifer is the primary water-bearing unit in the area. Water quality is generally good and yields are plentiful. The Floridan aquifer furnishes almost all of the local water for commercial, industrial, domestic, irrigation, and municipal use. The aquifer is typically encountered at a depth of 150 feet and is usually under artesian conditions.

Surface Water. Moody AFB is within the Suwannee River Basin, which discharges to the northeastern Gulf of Mexico. Major drainages in this basin that affect Moody AFB include the Withlacoochee River to the west and the Alapaha River to the east. A major feature of this basin is the GBBL wetland complex, which is partially within the installation boundary. Exclusive of the Okefenokee Swamp, the GBBL wetland complex is over 13,000 acres and is the largest freshwater lake/swamp system in the coastal plain of Georgia. This complex is composed of several broad Carolina bays (1 to 4 miles across) and shallow lakes, interconnected by cypress-black gum (*Nyssa sylvatica*) swamp.

The GBBL complex is owned and managed by several different landowners, including Moody AFB, USFWS, GDNR, Georgia Department of Transportation, The Nature Conservancy, and private landowners. Because it was recognized that this system should be managed as one large ecosystem, irrespective of land ownership, the major landowners within this complex created the GBBL Stewardship Council to provide for coordinated ecosystem management.

The 1,255-acre Banks Lake is the only major body of water within this wetland complex. A smaller open water area in this wetland complex is Shiner Pond, which is along the central-northern boundary of Moody AFB (see **Figure 3-2**). This area is approximately 65 acres in size and contains vast areas with cypress trees and other vegetative cover. The wetland system is recharged primarily by precipitation falling within the catchment basin, although the bays may receive a portion of their recharge water from adjacent shallow groundwater sources. Recharge by precipitation occurs mainly from December through March, when rainfall is typically heavy and evapotranspiration is low.

Water flow through the GBBL wetland complex is generally southeastern and southward. The northern parts of Banks Lake and approximately one-third of the shrub/swamp area known as Oldfield Bay drain to the northeast into Mill Creek, a tributary of Big Creek, which discharges to the Alapaha River, and ultimately into the Suwannee River. Between Oldfield Bay and Grand Bay lies a system of open marsh and creek swamp. Watersheds from the two bays converge here to form Grand Bay Creek, the major

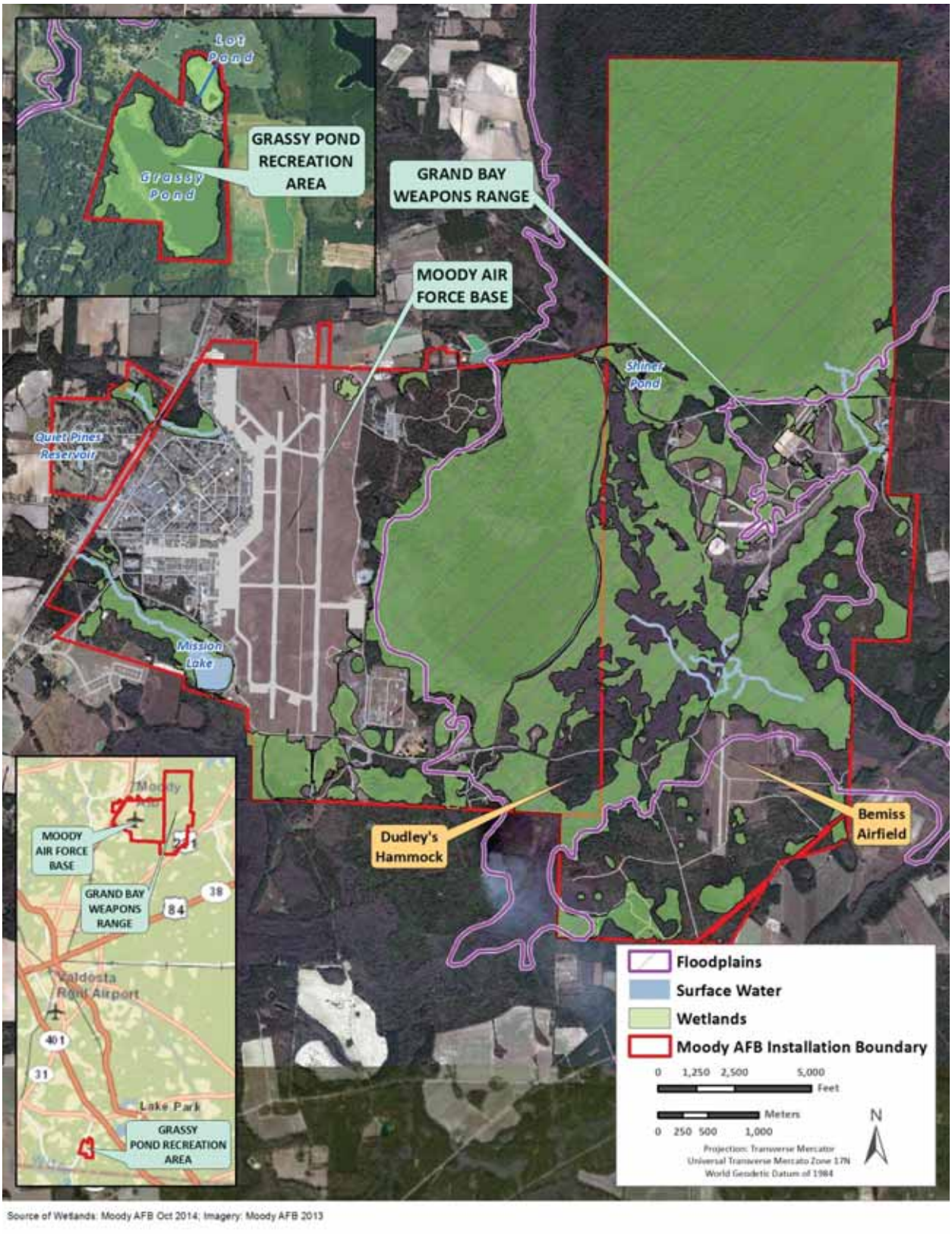


Figure 3-2. Surface Waters and Wetlands on Moody AFB

surface water collector for the wetland complex. Southern parts of Banks Lake, and the remainder of Grand Bay, drain to the southeast through Grand Bay Creek. Grand Bay Creek eventually flows into the Alapaha River (Hicks and Clayton 2006).

Several water control structures are located along the dikes and sills in the system, but are generally left open to facilitate "normal" hydrologic processes. The surface waters of the GBBL complex are "blackwater" systems, characterized by very soft, poorly buffered, acidic waters (pH of 4.5 to 6.5) of relatively low fertility. The characteristic brown tint of these waters is caused primarily by the presence of high concentrations of humic and tannic acids (Hicks and Clayton 2006).

Storm water from the Main Base area is discharged by a series of drainage ditches. Five major storm drain outfalls occur along Burma Road, with water from these outfalls eventually draining into Mission Lake. Storm water from the northwest portion of the airfield forms the headwaters of Beatty Creek, eventually draining through Cat Creek to the Withlacoochee River.

Water bodies present on the Main Base include Mission Lake and Quiet Pines Lake. Mission Lake, situated southwest of the parallel runways, is an impoundment encompassing approximately 30 acres.

Wetlands. Overall, there are approximately 5,500 acres of wetlands within the boundary of Moody AFB (see **Figure 3-2**), with the majority of these within the GBBL wetland complex. Wetland delineation studies were first initiated on the installation in 1997–1998. The initial delineation was limited to wetlands located within the Main Base. A subsequent follow-up study was conducted in 1998 by the USACE. This study involved the field verification of wetlands on Grand Bay Weapons Range originally delineated through aerial photograph interpretation. A final wetlands delineation study was conducted in 1998–1999 only on the Grand Bay Weapons Range impact area. The results from these three documents have been combined to create a complete wetlands delineation map for Moody AFB. However, field verification of some wetland boundaries from these surveys determined that the delineations are suspect, and the installation reverted to using the original data layers derived from aerial photograph interpretation. In 2007, a wetland delineation was completed on the Main Base that identified approximately 1,819 acres of wetlands (Moody AFB 2007).

Floodplains. Floodplains at Moody AFB and Grand Bay Weapons Range occur in two areas. An area due east of the runways and an area in the southern portion of Grand Bay Weapons Range within Dudley Bay are denoted as falling within the 100-year floodplain (**Figure 3-2**).

3.4 Biological Resources

3.4.1 Definition of Resource

Biological resources include native or naturalized plants and animals and the habitats (e.g., grasslands, forests, and wetlands) in which they exist. Protected and sensitive biological resources include listed (threatened or endangered) and proposed species under the ESA as designated by the USFWS, state-listed threatened or endangered species as designated by the GDNR, and migratory birds. Applicable laws, regulations, and policies regarding biological resources are included in **Appendix A**.

Sensitive habitats include those areas designated by the USFWS as critical habitat protected by the ESA and sensitive ecological areas as designated by state or Federal rulings. Sensitive habitats also include wetlands, plant communities that are unusual or of limited distribution, and important seasonal use areas for wildlife (e.g., migration routes, breeding areas, crucial summer/winter habitats).

3.4.2 Existing Conditions

3.4.2.1 Vegetation

Vegetation Communities. The historic vegetative composition of Moody AFB consisted of upland areas dominated by longleaf pine forests, with mesic longleaf pine savannas on the Main Base, and wet-mesic longleaf pine savannas and wet mixed-pine savannas in the Grand Bay Weapons Range.

The current vegetative composition on Moody AFB is primarily a result of land management practices and actions undertaken during the 1940s during the construction of the installation. Currently, the unimproved areas of Moody AFB feature several distinct natural communities or ecosystems that have been shaped or modified primarily through anthropogenic actions. These communities range from xeric to hydric, with transitions and dynamic interactions between the different areas. A small, but unique, natural area known as Dudley's Hammock occurs in the south-central portion of Moody AFB. This hammock or "tree island" is a rare remnant of the mesic hardwood hammock community in South Georgia. Natural communities on Moody AFB include upland pine forests, pine flatwoods, and extensive areas comprised of various wetland communities (see **Figure 3-3**).

Wetlands cover approximately 5,500 acres (46 percent) of the installation within the GBBL ecosystem. The Carolina bays are typically vegetated with a scrub-shrub cover type; wetter areas transition into a black gum-cypress swamp association with pockets of open water. The black gum-cypress swamp association is primarily vegetated with an overstory of these species, but contains significant numbers of red maples (*Acer rubrum*) and sweetbays (*Magnolia virginiana*). The understory vegetation is moderately dense and consists of heaths, redbay (*Persea palustris*), wax myrtle (*Myrica cerifera*), cinnamon fern (*Osmunda cinnamomea*), chain fern (*Woodwardia virginica*), and greenbrier (*Smilax* spp.). In the transition areas from wetlands to uplands, pond pine (*Pinus serotina*), slash pine, and dense thickets of evergreen shrubs and palmetto become more predominant as the soils transition from hydric to mesic. The upland areas are comprised predominantly of a pine forest type, established either through natural community succession or through artificial regeneration (i.e., pine plantations).

For more detailed descriptions of vegetation communities, see **Section 5.2** of the INRMP.

Forestry/Silviculture. Moody AFB includes 7,469 acres of forests that are actively managed. The forested stands include 2,610 acres of upland forests composed of pine or mixed pine/hardwood and 4,859 acres of wetland forests composed of pine, cypress, or black gum. Commercial forest management at Moody AFB promotes and is mainly limited to upland pine forests, which are managed on a sustained-yield basis and harvested on a 60- to 80-year rotation. Overall, the forestry program at Moody AFB is self-sustaining.

Prescribed Burning. Prescribed burning on Moody AFB is managed by the Civil Engineer Environmental personnel with the use of trained volunteers and GDNR personnel. Currently, the upland forest communities are managed through prescribed burning on a 3-year rotation. Moody AFB has identified two burn seasons: dormant season (December through mid-March), and growing season (mid-March through May). See **Section 3.5.2** for additional information regarding fire management.

Wildland Fire Management. Wildland fires are uncommon occurrences at Moody AFB, with an annual average of less than two wildland fires on the installation. Wildfire peak danger periods occur between mid-winter and early summer and then again in mid-fall. Wildfire intensity on the installation has been lessened through the reduction of fuel loads through prescribed burning, thinning and management of commercial forest stands, and creation and annual maintenance of permanent firebreaks throughout the installation.

3.4.2.2 Wildlife

Moody AFB is within the lower coastal plains and flatwoods section of the Southern Coastal Plain ecoregion (Bailey 1995), which supports a diverse complex of habitat which in turn supports a high diversity of faunal species. These habitats can be simplified and grouped into two main habitat types: longleaf pine upland forests and the Carolina Bay Swamp Complex.

Faunal communities common to the longleaf pine (*Pinus palustris*) upland forests and longleaf pine/slash pine flatwoods include larger species such as white-tailed deer (*Odocoileus virginianus*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), opossum (*Didelphis virginiana*), bobcat (*Lynx rufus*), and gray fox (*Urocyon cinereoargenteus*). The small mammal community is comprised of various small rodents, gray squirrel (*Sciurus carolinensis*), fox squirrel (*Sciurus niger*), and the eastern cottontail rabbit (*Sylvilagus floridanus*). Forest habitat intermingled with the wetlands offers habitat for a variety of amphibian species including little grass frog (*Pseudacris ocularis*), squirrel tree frog (*Hyla squirella*), eastern spadefoot toad (*Scaphiopus holbrooki*). Common reptiles include the eastern box turtle (*Terrapene carolina*), five-lined skink (*Eumeces inexpectatus*), eastern glass lizard (*Ophisaurus ventralis*) eastern cottonmouth (*Agkistrodon piscivorus*), and gopher tortoise (Moody AFB 2013).

The wetland areas within the Carolina Bay Swamp Complex offer habitat to other mammal species such as beavers (*Castor canadensis*) and round-tailed muskrats (*Neofiber alleni*) as well as those previously discussed for the forest habitat. Water-dependent amphibians and reptiles in the area include pig frogs (*Rana grylio*), alligators (*Alligator mississippiensis*), snapping turtles (*Chelydra serpentina*), striped newt (*Notophthalmus viridescens*), tiger salamander (*Ambystoma tigrinum*), eastern cottonmouths, southern water snakes (*Nerodia rhombifer*), and southern bullfrogs (*Rana catesbeiana*) (Moody AFB 2013).

Common bird species are similar between the two main habitat types, with slight variations occurring with habitat-specific species. Common birds found within longleaf pine forests include the northern redshouldered hawk (*Buteo lineatus*), bobwhite quail (*Colinus virginianus*), yellow-billed cuckoo (*Coccyzus americanus*), ruby-throated hummingbird (*Archilochus colubris*), downy woodpecker (*Picoides pubescens*), flicker (*Colaptes aurates*), American crow (*Corvus brachyrhychos*), Carolina chickadee (*Parus carolinensis*), wild turkeys (*Meleagris gallopavo*), blue-gray gnatcatcher (*Polioptila caerulea*), ruby-crowned kinglet (*Regulus calendula*), white-eyed (*Vireo griseus*) and red-eyed vireo (*Vireo olivaceus*), tufted titmouse (*Parus bicolor*), as well as other species of migratory song birds. The yellowbellied sapsucker (*Sphryaphicus varius*), great-crested flycatcher (*Myiarchus crinitus*), blue jay (*Cyanocitta cristata*), gray catbird (*Dumetella carolinensis*), northern cardinal (*Cardinal cardinalis*), indigo bunting (*Passerina cyanea*), are additional avian species often associated with the swamp complexes. Grand Bay contains a large heron, egret, ibis rookery, as well as a year-round resident population of Florida sandhill cranes (*Grus canadensis pratensis*). Common gallinules (*Gallinula chloropus*), least bitterns (*Ixobrychus exilis*), and wood ducks (*Aix sponsa*) are known to nest in this bay, and wood storks (*Mycteria americana*), common snipe (*Gallinago gallinago*), killdeer (*Charadrius vociferus*), and other shorebirds utilize the area during migration along with migrating waterfowl such as ringed-neck duck (*Aythya collaris*), mallard (*Anas platyrhinchos*), blue-winged teal (A*nas dicors*), and green-winged teal (*Anas crecca*) (Moody AFB 2013).

The fish and wildlife management component of the INRMP is primarily focused on the management and conservation of game fish and wildlife. However, it also includes the management of non-game species, such as neotropical migratory birds, furbearers, predators, etc. Fisheries in five lakes and ponds are managed through stocking, aquatic weed control, and sale of licenses. Hunting on the Main Base and the Grand Bay Wildlife Management Area (WMA) requires a permit and is limited to white-tailed deer, eastern wild turkey, American alligator, and small game, and is only conducted on weekends when Grand

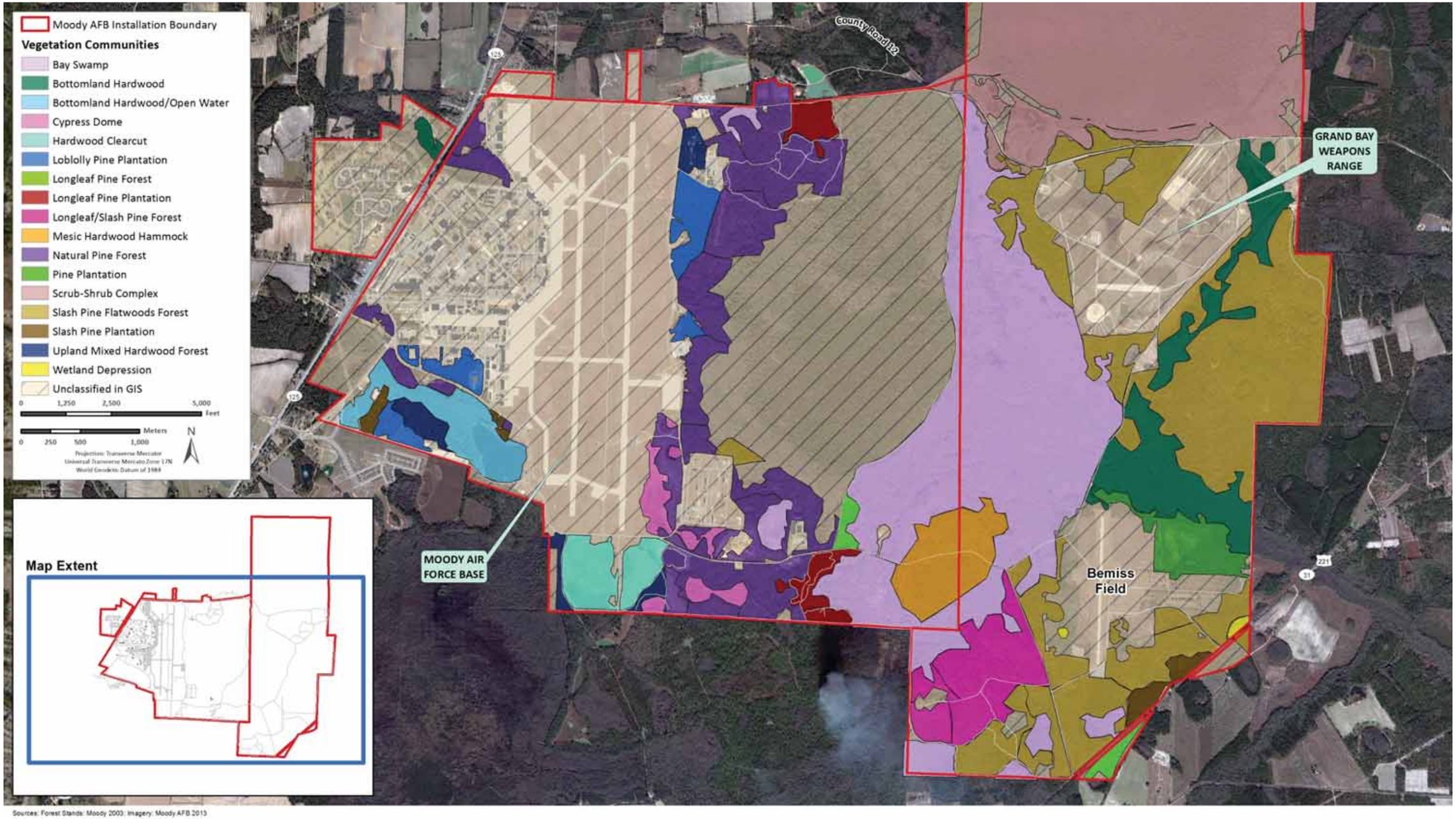


Figure 3-3. Vegetation Communities at Moody AFB

Bay Weapons Range is not being used for military training. Other wildlife management activities include creation of wildlife openings and enhancement of native habitats through prescribed burning and forestry practices.

3.4.2.3 Protected Species

Based on the 2011 listing status, there are 18 RTE species on Moody AFB (see **Table 3-3**). Of these 18 species, three are federally listed under the ESA as either threatened or endangered: wood stork (federally and state endangered), the eastern indigo snake (federally and state threatened), and the American alligator (identified as threatened because of similarity in appearance to the American crocodile). The gopher tortoise is currently a state threatened species and a Federal candidate species for listing under the ESA. No critical habitat is found on Moody AFB. The USFWS removed the bald eagle from the list of species protected under the ESA in July 2007. However, the bald eagle continues to be protected under the Federal Bald and Golden Eagle Protection Act and the MBTA. Detailed information on several of the RTE species that occur on the installation is provided in **Section 11.3** of the INRMP.

The eastern indigo snake, gopher tortoise, and bald eagle are the only RTE species that are actively managed on Moody AFB because these species are most likely to be potentially affected by the military mission (see **Figure 3-4**) (Moody AFB 2013).

Gopher Tortoise. There are approximately 1,000 acres of gopher tortoise habitat on the installation. As of 30 September 2013, there are 319 marked gopher tortoise burrows in seven colonies on the installation: Colony 71st (87 burrows), Colony CP (39 burrows), Colony AR (8 burrows), Colony BR (18 burrows), Colony BF (13 burrows), and Colony CS (154 burrows).

Gopher tortoise management is completed through projects identified in the Moody AFB INRMP with concurrence by GDNR and USFWS. Current projects include: seasonal monitoring and surveys of known gopher tortoise populations; disease surveillance for Upper Respiratory Tract Disease; gopher tortoise movement studies in relation to military activities; gopher tortoise mark-recapture population demography study; and habitat improvement/restoration through burning, chemical release, and mechanical means (see **Table 3-4**). Pedestrian surveys of suitable gopher tortoise habitat are conducted annually to identify new gopher tortoise burrows.

Indigo Snake. The GDNR indicates that three indigo snakes were sighted in the Bemiss Field area of Grand Bay Weapons Range in 1991. No indigo snakes were observed during two species-specific surveys conducted in 1995 and 2002. In an effort to enhance the small indigo snake population on the installation, GDNR personnel introduced two confiscated indigo snakes to Grand Bay Weapons Range in 1995. New introductions of federally listed or candidate species require USAF approval and consultation with the USWFS prior to release. During 1996, while conducting RTE species surveys to support a Biological Assessment for the Bemiss Field C-130 drop zone, biologists with the USACE observed two indigo snakes, one adult and one juvenile, in the Grand Bay WMA Campground on Grand Bay Weapons Range.

Concurrent with gopher tortoise surveys, installation personnel conduct visual searches for eastern indigo snakes, including the examination of burrows for tortoises with burrow cameras and burrow entrance cameras and searches of burrow entrances for indigo snake skin sheds. All potential sightings of indigo snakes on the installation are reported to Civil Engineer Environmental personnel and the areas are immediately surveyed.

Table 3-3. RTE Species Identified on Moody AFB

Class	Common Name	Scientific Name	2012 Federal Status(a)	2012 State Status(b)	2012 NHP Status(c)
Plants	Green-fly Orchid	*Epidendrum conopseum*	None	U	G4/S3
Reptiles	American Alligator	*Alligator mississippiensis*	T (S/A)	None	G5/S4
	Eastern Indigo Snake	*Drymarchon couperi*	T	T	G3/S3
	Gopher Tortoise	*Gopherus polyphemus*	Candidate	T	G3/S2
	Southern Hognose Snake	*Heterodon simus*	None	T	G2/S2
	Alligator Snapping Turtle	*Macrochelys temminckii*	None	T	G3G4/S3
	Eastern Coral Snake	*Micrurus fulvius*	None	None	G5/S3
Birds	Bachman's Sparrow	*Aimophila aestivalis*	None	R	G3/S2
	American Bittern	*Botaurus lentiginosus*	None	None	G4/S3?
	SE American Kestrel	*Falco sparverius paulus*	None	R	G5/S2
	Florida Sandhill Crane	*Grus canadensis pratensis*	None	None	G5/S1
	Greater Sandhill Crane	*Grus canadensis tabida*	None	None	G5/S2
	Wood Stork	*Mycteria americana*	E/PT	E	G4/S2
	Southern Bald Eagle	*Haliaeetus l. leucocephalus*	None	T	G5/S2
	Loggerhead Shrike	*Lanius ludovicianus migrans*	None	None	G4/S3
Mammals	Northern Yellow Bat	*Lasiurus intermedius*	None	None	G4G5/S2S3
	Southeastern Myotis	*Myotis austroriparius*	None	None	G3G4/S3
	Round-tailed Muskrat	*Neofiber alleni*	None	T	G3/S3

Sources: Georgia DNR 2012; NatureServe 2012; USFWS 2012a.

(a) Federal:

E = Endangered. A species that may become extinct or disappear from a significant part of its range if not immediately protected.

T = Threatened. A species that may become endangered if not protected.

S/A = Similarity of appearance.

E/PT = The USFWS has proposed reclassifying the wood stork from endangered to threatened (USFWS 2012b).

(b) State:

E = Endangered. A species which is in danger of extinction throughout all or part of its range in Georgia.

T = Threatened. A species which is likely to become an endangered species in the foreseeable future throughout all or part of its range in Georgia.

R = Rare. A species which may not be endangered or threatened but which should be protected because of its scarcity.

U = Unusual. A species deserving of special consideration and plants subjected to commercial exploitation.

(c) Natural Heritage Program (NHP):

G1 = Critically imperiled globally because of extreme rarity (5 or fewer occurrences).

G2 = Imperiled globally because of rarity (6 to 20 occurrences).

G3 = Rare and local throughout range or in a special habitat or narrowly endemic (on the order of 21 to 100 occurrences).

S1 = Critically imperiled in Georgia because of extreme rarity (5 or fewer occurrences).

S2 = Imperiled in Georgia because of rarity (6 to 20 occurrences).

S3 = Rare and uncommon throughout the state or in a special habitat or narrowly endemic (on the order of 21 to 100 occurrences).

? = Denotes questionable rank; best guess given whenever possible.

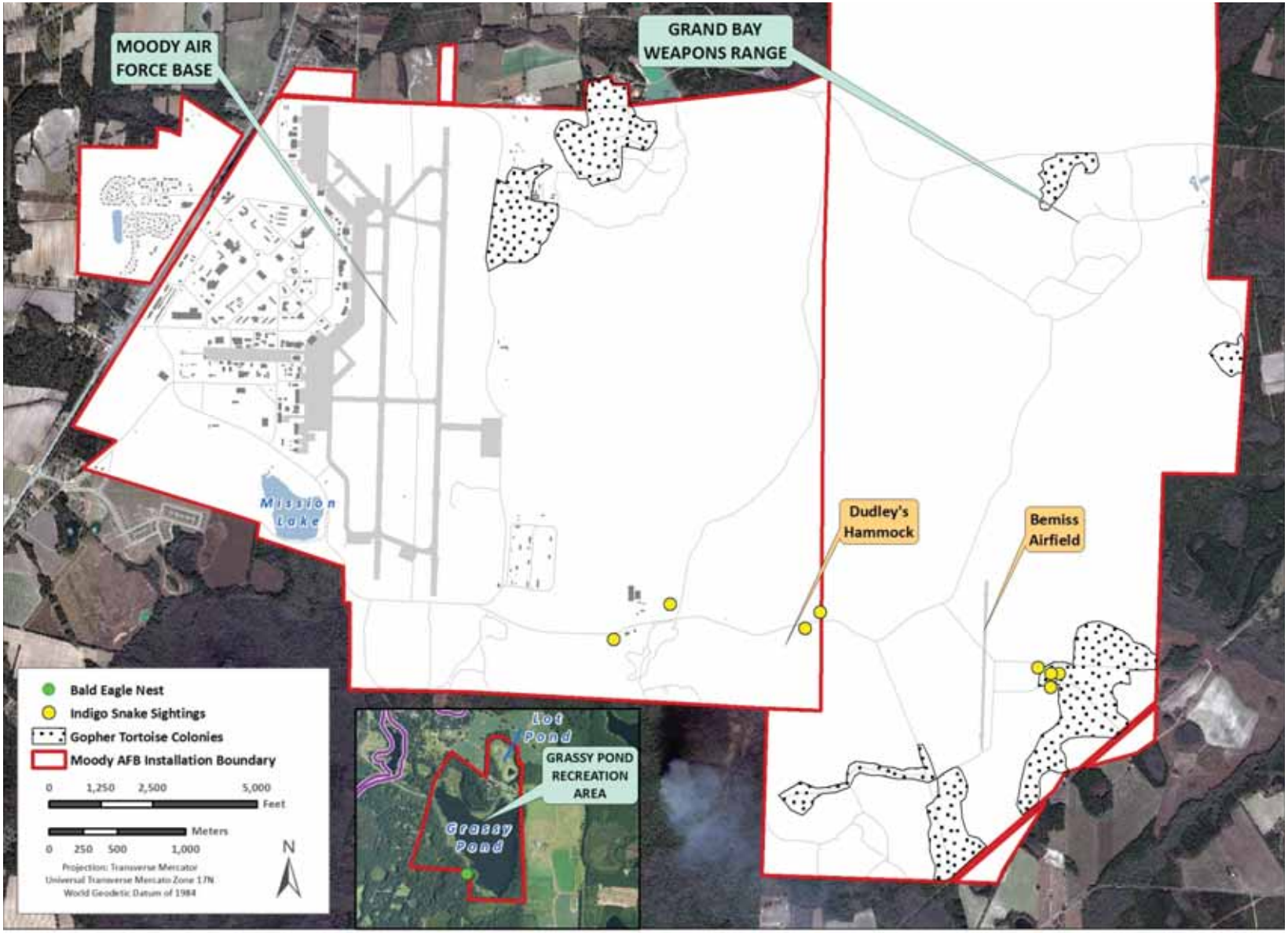


Figure 3-4. RTE Species Locations on Moody AFB

Table 3-4. Gopher Tortoise Management Activities at Moody AFB

Tortoise Habitat Activity		Acres
Included in Management Plan		946
Restored/Improved		63
Maintained		36
Burned	dormant season	339 (66% of total burned)
	growing season	175 (34% of total burned)
Invasive Species Treatment/Eradication		4.4 (Japanese climbing fern)

Source: GTCCA 2013

Bald Eagle. As of July 15, 2014, one active eagle nest exists immediately adjacent to Grassy Pond Recreation Area. The bald eagle nest occurs on a privately owned portion of uplands along the southern shoreline of Grassy Pond. The far west bank of the lake was accessed to observe the aerie and collect data on the nesting pair. During this period, it was observed that the eagle pair was successful in mating and fully fledging out one eaglet.

Management of bald eagles has primarily focused on the protection of the single nest tree at Grassy Pond Recreation Area and improvement of foraging resources in Grassy Pond. Habitat management to improve foraging for the eagles was implemented by personnel at Moody AFB. The water hyacinth (*Eichhornia crassipes*), an invasive floating aquatic plant, was the primary plant targeted for herbicide application. The herbicidal treatment was a success in greatly reducing the presence of the invasive, floating, aquatic vegetation. Application of herbicide to any water hyacinth not killed in the first treatment is recommended along with periodic monitoring of Grassy Pond to ensure that the site remains a suitable habitat for bald eagles.

3.5 Safety

3.5.1 Definition of Resource

A safe environment is one in which there is no, or an optimally reduced, potential for death, serious bodily injury or illness, or property damage. Human health and safety addresses workers' health and safety during project activities, as well as public health and safety during and following these activities.

Site safety requires adherence to regulatory requirements created for the benefit of employees. It includes implementation of engineering and administrative practices that aim to reduce risks of illness, injury, death, and property damage. The health and safety of onsite military and civilian workers are safeguarded by DOD and USAF regulations designed to comply with standards issued by the Occupational Safety and Health Administration (OSHA), USEPA, and state occupational safety and health agencies. These standards specify health and safety requirements, the amount and type of training required for workers, the use of personal protective equipment, administrative controls, engineering controls, and permissible exposure limits for workplace stressors.

Health and safety hazards can often be identified and reduced or eliminated before an activity begins. Necessary elements for an accident-prone situation or environment include the presence of the hazard itself together with the exposed (and possibly susceptible) population. The degree of exposure depends primarily on the proximity of the hazard to the population. The proper operation, maintenance, and repair of vehicles and equipment carry important safety implications. Any facility or human-use area with

potential explosive or other rapid oxidation process creates unsafe environments for nearby populations due to noise or fire hazards. Noisy environments can also mask verbal or mechanical warning signals such as sirens, bells, or horns.

Bird and wildlife strikes are a safety concern at USAF installations due to the potential damage that a strike might have on an aircraft and injury to personnel. Birds can be encountered at altitudes of 30,000 feet and higher; however, most aircraft strikes (approximately 50 percent) have been recorded at altitudes lower than 400 feet, and 92 percent have occurred below 2,500 feet (USAF 2014a). During takeoff and landing, aircraft also face collision dangers from other types of wildlife, such as white-tailed deer and coyotes.

The USAF has a BASH program designed to reduce wildlife hazards to aircraft operations. Through this program, the USAF has coordinated and developed policy, collects and analyzes wildlife strike data, educates the appropriate personnel, and coordinates for BASH equipment approval.

3.5.2 Existing Conditions

Personnel Safety and Occupational Health. Daily operations conducted on USAF installations, training ranges, and other facilities are performed in accordance with applicable USAF safety regulations, published USAF Technical Orders, and standards prescribed by USAF OSHA requirements. USAF OSHA 91-series standards are consolidated in AFI 91-203, *Air Force Consolidated Occupational Safety Instruction*, dated 15 June 2012. The USAF OSHA Program applies to all USAF activities and its purpose is to minimize loss of resources and protect USAF personnel from death, injuries, or illnesses by managing risks.

Environmental Restoration Program. The DOD developed the ERP to facilitate thorough investigation and cleanup of contaminated sites on military installations (i.e., active installations, installations subject to Base Realignment and Closure, and formerly used defense sites). The MMRP is a component of the ERP. Moody AFB has 31 closed ERP sites and one closed MMRP site, none of which required remediation. An additional 11 ERP sites have on-going corrective action and have land use controls associated with them. There is one MMRP site, the former skeet range, which has an ongoing investigation (USAF 2014b).

Fire Management. Moody AFB has a wildland fire management program that involves both prescribed burning and the control of wildfires in accordance with AFI 32-7064. This plan provides guidance for the installation on issues relating to wildland fires, including the principles and practices of prescribed burning on the installation, and organizational responsibility and direction for wildfire suppression or containment on the installation. The Moody Fire Emergency Services (MFES) Flight is the primary responder to wildfires identified on Main Base and Grand Bay Weapons Range. The MFES Flight primarily protects installation buildings and structures, and in a limited role will suppress wildfires near installation roads and fire breaks. If necessary, MFES contacts the Base Forester or Environmental Flight Chief for consultation on where and when fire breaks should be installed to avoid damaging sensitive areas such as ERP wells, gopher tortoise burrows, and no plow zones.

BASH. Moody AFB has implemented a BASH management plan as outlined in the *Bird-Aircraft Strike Hazard (BASH), 1 October 2009 (with interim change, 29 July 2010)*. The purpose of this plan is to control and minimize the collision potential between aircraft and wildlife in and around the immediate vicinity of Moody AFB airfields and training areas. The two most hazardous groups of birds with the potential to affect aircraft at the installation are raptors (hawks, black vultures, turkey vultures) and sandhill cranes.

As discussed in the INRMP, to assist in the reduction of wildlife strikes on the installation, natural resources management activities are coordinated with the BASH biologist and are integrated with the BASH plan. Permanent hunting stands for large game have been set up around the flightline, and hunters are provided with sighting reports of deer and turkeys to concentrate their efforts in those areas. In late winter/early spring, one-third of the airfield is burned to remove thatch, kill herbaceous weeds, and promote the establishment of a bahia grass monoculture. Additional natural resource actions that assist in the reduction of BASH risk include the management of the forests around the airfield to minimize wildlife usage. For instance, loblolly pine plantations have been established around the flightline with closely-spaced trees to encourage canopy closure and the shading of the forest floor. Canopy closure inhibits the development of herbaceous understory that could be used by wildlife species for forage and cover.

3.6 Cultural Resources

3.6.1 Definition of Resource

Cultural resources are heritage-related resources including prehistoric and historic sites, buildings, structures, districts, or any other physical evidence of human activity considered important to a culture, a subculture, or a community for scientific, traditional, religious, or other purposes. Depending on the condition and historic use, such resources might provide insight into the cultural practices of previous civilizations or they might retain cultural and religious significance to modern groups. The area of potential effect is the geographic area(s) within which an undertaking could directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist.

Typically, cultural resources are subdivided into archaeological resources (i.e., prehistoric or historic sites where human activity has left physical evidence to that activity but no structures remain standing); architectural resources (i.e., buildings or other structures or groups of structures, or designed landscapes that are of historic or aesthetic significance); or resources of traditional, religious, or cultural significance to Native American tribes. Archaeological resources comprise areas where human activity has measurably altered the Earth or deposits of physical remains are found (e.g., projectile points and bottles). Architectural resources include standing buildings, bridges, dams, or other structures of historic significance. Generally, architectural resources must be more than 50 years old to be considered eligible for listing on the National Register of Historic Places. More recent structures, such as Cold War era resources, might be considered eligible if they are of exceptional importance or if they have the potential to gain significance in the future. Resources of traditional, religious, or cultural significance to Native American tribes can include archaeological resources, structures, neighborhoods, prominent topographic features, habitat, plants, animals, and minerals that Native Americans or other groups consider essential for the preservation of traditional culture.

3.6.2 Existing Conditions

Moody AFB was established in 1941 and currently encompasses approximately 10,843 acres. The Main Base and the Grand Bay Weapons Range have been surveyed for cultural resources. The results of these surveys include 23 archaeological sites, 39 isolated archaeological finds, 234 Cold War-era and older buildings and structures. Two archeological sites and one historic structure have been identified as eligible for listing under the National Register of Historic Places. The management of cultural resources on the installation is outlined in the Moody AFB ICRMP.

American Indian tribes with ties to the area were consulted in the preparation of this document and given the opportunity to alert the USAF to the location of traditional cultural properties that may be affected by the Proposed Action (see **Appendix B**).

4. Environmental Consequences

This section describes the potential environmental consequences associated with implementing the Proposed Action and the No Action Alternative. Each alternative is evaluated for its potential to affect physical, biological, and socioeconomic resources in accordance with 40 CFR §1508.8. Potential impacts for each resource area are described in terms of their significance. Significant impacts, if any, are those impacts that would result in substantial changes to the environment or socioeconomic resources (as defined by 40 CFR §1508.27) and should receive the greatest attention in the decisionmaking process.

4.1 Air Quality

4.1.1 Evaluation Criteria

The environmental consequences on local and regional air quality conditions from a proposed Federal action are determined based upon the increases or decreases in regulated air pollutant emissions and upon existing conditions and ambient air quality. The evaluation criteria are dependent on whether the proposed action is in an attainment, nonattainment, or maintenance area for criteria pollutants.

For attainment areas, a Proposed Action would be considered significant if the net increases in pollutant emissions would result in any one of the following scenarios:

- Cause or contribute to a violation of any national or Georgia ambient air quality standard
- Expose sensitive receptors to substantially increased pollutant concentrations
- Exceed any evaluation criteria established by a state implementation plan.

There are no regulatory thresholds of significance for GHG emissions; however, CEQ has released the *Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions*, which recommends that 25,000 metric tons per year (tpy) of CO_2-equivalent emissions is a meaningful threshold for when to consider GHG emissions in NEPA documentation. CO_2 emissions are provided in this EA for information and comparison purposes as they are approximately 85 to 90 percent of the total GHG emissions, which are represented as CO_2-equivalent emissions.

4.1.2 Proposed Action

Prescribed Burns. Short-term, minor, adverse effects on air quality would result from the prescribed burns. The prescribed burns would generate air emissions of criteria air pollutants directly from the combustion of vegetation. The prescribed burns are assumed to occur annually and burn on average 593 acres each year (Crain 2014). The mass of fuel to be consumed is assumed to be 3 tons per acre (Crain 2014).

Table 4-1 summarizes the estimated amount of air emissions that would be produced and provides a comparison to the regional emissions inventory. **Appendix C** contains detailed calculations and the assumptions used to estimate the air emissions associated with the prescribed burns. The estimated annual air emissions is not expected to trigger air quality thresholds of significance because the emissions of each criteria pollutant would be less than 1 percent of the regional inventory for each pollutant. With regard to GHG emissions, emissions of CO_2 from prescribed burns would be part of the carbon cycle, which are typically not included in regional inventories. Carbon cycle CO_2 emissions do not contribute to global climate change because, unlike burning fossil fuels, the carbon cycle is a natural process where carbon

Table 4-1. Estimated Annual Air Emissions Resulting from Prescribed Burns

Activity	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO (tpy)	VOC (tpy)	NO_x (tpy)
Air Emission Estimates					
Prescribed Burns	33.4	23.1	238.4	12.3	7.1
Compared to Regional Inventory Emissions					
Percent of Regional Inventory (2011)	0.3037	0.7663	0.6032	0.0312	0.1023

Notes:

Emissions of sulfur oxides would be negligible.

Emissions of CO_2 from prescribed burns would be part of the natural carbon cycle, which are typically not included in inventories.

in the atmosphere is transferred to plant matter during vegetation growth and is released into the atmosphere when vegetation decays. As such, a comparison of CO_2 emissions from the prescribed burns to the 25,000 metric tpy of CO_2-equivalent emissions meaningful assessment threshold is not necessary. Therefore, no impacts on climate change would occur.

Prescribed burns would be conducted in accordance with the *Basic Smoke Management Plan* developed in understanding with the GDNR Environmental Protection and Wildlife Resources divisions and Georgia Forest Commission. This plan outlines best management practices and environmental control measures to minimize the air quality impacts from the prescribed burns. Examples of best management practices and environmental control measures included in the smoke management plan include restricting burning to days when wind conditions provide good dispersion, limiting the amount of land burned, and providing the public with appropriate notification, education, and awareness (GDNR 2008).

Timber Harvest and Vegetation Control Projects. Short-term, negligible, adverse effects on air quality would result from the various projects to harvest timber and conduct vegetation control on Moody AFB. The timber harvest and vegetation control projects would generate emissions of criteria air pollutants and GHGs directly from the operation of vegetation cutting equipment, chemical spraying equipment, hauling, and site preparation equipment. Vegetation control projects, such as those to remove invasive species and perform aquatic weed control, would generate air emissions but at negligible levels that do not require quantitative analysis. Timber harvest and vegetation control projects would occur annually with the number of acres to be disturbed varying by year. None of the proposed activities would generate appreciable fugitive particulate matter emissions because it is anticipated that the majority of particulate matter generated would be large enough to settle to the ground.

Table 4-2 summarizes the estimated annual amount of air emissions that would be produced by timber harvest and vegetation control projects and provides a comparison to the regional inventory. **Appendix C** contains detailed calculations and the assumptions used to estimate the air emissions. The estimated annual air emissions is not expected to trigger any air quality thresholds of significance because the emissions of each criteria pollutant would be less than 0.01 percent of the regional inventory for each pollutant. With regard to GHG emissions, the estimated maximum annual emission of CO_2 from the timber harvests and vegetation control projects would be approximately 0.15 percent of the 25,000 metric tpy of CO_2-equivalent emissions meaningful assessment threshold; therefore, the Proposed Action would not have significant impacts on climate change.

Table 4-2. Estimated Annual Air Emissions Resulting from Timber Harvests and Vegetation Control Projects

Activity	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	CO_2 (tpy)
Air Emission Estimates							
Total 2015 Emissions	0.268	0.023	0.110	0.021	0.019	0.018	35.979
Total 2016 Emissions	0.111	0.010	0.049	0.008	0.008	0.007	15.469
Total 2017 Emissions	0.091	0.009	0.038	0.007	0.006	0.006	16.441
Total 2018 Emissions	0.070	0.007	0.030	0.005	0.005	0.004	11.752
Compared to Regional Inventory Emissions							
Percent of Regional Inventory 2015	0.0039	0.0001	0.0003	0.0026	0.0002	0.0006	NA
Percent of Regional Inventory 2016	0.0016	<0.0000	0.0001	0.0010	0.0001	0.0002	NA
Percent of Regional Inventory 2017	0.0013	<0.0000	0.0001	0.0008	0.0001	0.0002	NA
Percent of Regional Inventory 2018	0.0010	<0.0000	0.0001	0.0006	<0.0000	0.0001	NA

Air Permitting. The Proposed Action would not alter air emissions from stationary sources because no generators, boilers, or other stationary emissions sources would be added to or removed from Moody AFB. As such, the Proposed Action would not have any air permitting implications.

As discussed, only negligible to minor impacts to air quality from prescribed burns, timber harvest and vegetation control projects would occur; therefore, there would be no significant impacts on air quality from the Proposed Action.

4.1.3 No Action Alternative

Under the No Action Alternative, management of natural resources would continue as characterized in the Moody AFB 2007 INRMP. Therefore, under the No Action Alternative, air emissions would continue to be generated in a manner identical to existing conditions. There would be no significant impacts on air quality from the No Action Alternative.

4.2 Geology and Soils

4.2.1 Evaluation Criteria

Protection of unique geological features and minimization of soil erosion are considered when evaluating potential effects of a proposed action on geological resources. Generally, adverse effects can be avoided or minimized if proper construction techniques, erosion-control and storm water-management measures, and structural engineering design are incorporated into project development.

Effects on geology and soils would be significant if they would alter the lithology, stratigraphy, and geological structures that control groundwater quality, distribution of aquifers and confining beds, and groundwater availability; or substantially change the soil composition, structure, or function within the environment.

4.2.2 Proposed Action

Short-term, minor, adverse impacts on soil resources could occur with habitat improvement activities. Ground disturbing land management activities have the potential to accelerate erosion if proper erosion control measures are not in place or are not effective. Implementation of certain projects described in the INRMP (e.g., clearcuts and prescribed burning) may temporarily expose soils and could result in minor, but temporary, soil disturbance; however, these projects would be beneficial in the long term when vegetation is reestablished.

By implementing an effective soil erosion and sedimentation program, impacts on geologic resources and soils associated with erosion and sedimentation on Moody AFB would be minimized. In the long term, implementation of the INRMP would increase soil stabilization. Therefore, there would be no significant impacts on geology and soils from the Proposed Action.

4.2.3 No Action Alternative

Under the No Action Alternative, management of soil resources would continue as characterized in the Moody AFB 2007 INRMP. Long-term, minor, adverse impacts on soil resources would be expected to continue. By failing to implement a more effective soil erosion and sedimentation program, impacts on geology and soils associated with erosion and sedimentation at Moody AFB are expected to continue. The No Action Alternative does not include the implementation of soil conservation measures, or a plan of action to prevent or minimize potential soil problems related to erosion and sedimentation before their occurrence. Implementation of the No Action Alternative would involve reactive management to problems after their occurrence, rather than managing the resources to prevent impacts. There would be no significant impacts on geology and soils from the No Action Alternative.

4.3 Water Resources

4.3.1 Evaluation Criteria

Evaluation criteria for effects on water resources are based on water availability, quality, and use and associated regulations. A proposed action would have significant effects on water resources if it were to do one or more of the following:

- Substantially reduce water availability or supply to existing users
- Overdraft groundwater basins
- Exceed safe annual yield of water supply sources
- Substantially adversely affect water quality
- Endanger public health by creating or worsening health hazard conditions
- Threaten or damage unique hydrologic characteristics
- Violate established laws or regulations adopted to protect water resources.

The potential impact of flood hazards on a proposed action is important if such an action occurs in an area with a high probability of flooding.

4.3.2 Proposed Action

Short-term, minor, adverse impacts on water resources could occur. Water resources could be negatively affected by land disturbing activities, including silvicultural activities, mechanical midstory removal, and prescribed burning. The use of herbicides could also negatively impact surface and ground water quality. However, best management practices (BMPs), including wetland and stream buffers, would be applied and herbicides would be applied in accordance with label requirements.

Long-term, beneficial impacts on surface waters and wetlands would be expected as a result of the Proposed Action. The long-term reduction of soil erosion (see **Section 4.2.2**) would reduce sedimentation of water resources on Moody AFB. As part of the Proposed Action, Moody AFB would also implement aquatic weed control. Excessive aquatic plant growth can impair recreational activities, reduce oxygen levels, and impede water flow. Also, certain nonnative plant species are extremely aggressive and can take over large areas of aquatic habitat. The selective management of aquatic weeds is vital to the protection of surface waters and wetlands on Moody AFB.

Moody AFB would continue to implement the wetland monitoring plan. Monitoring of the water quality in the wetlands would continue to be conducted to determine if the plans and practices being implemented are sufficient to prevent degradation to the system. No effects on floodplains would be expected as a result of the Proposed Action.

As discussed, the Proposed Action would have short-term minor adverse impacts and long-term beneficial impacts on water resources. Therefore, there would be no significant impacts on water resources from the Proposed Action.

4.3.3 No Action Alternative

Under the No Action Alternative, management of water resources would continue as characterized in the Moody AFB 2007 INRMP. The No Action Alternative does not provide a formal plan of action for maintaining and updating the comprehensive database information on wetland and watershed locations at Moody AFB. This would result in outdated water quality data, GIS layers, and expired Jurisdictional Determinations for previously delineated wetlands. This would result in long-term, minor, adverse impacts on water resources. There would be no significant impacts on water resources from the No Action Alternative.

4.4 Biological Resources

4.4.1 Evaluation Criteria

The level of impact on biological resources is based on (1) the importance (i.e., legal, commercial, recreational, ecological, or scientific) of the resource, (2) the proportion of the resource that would be affected relative to its occurrence in the region, (3) the sensitivity of the resource to the proposed activities, and (4) the duration of ecological ramifications. Impacts on biological resources are considered significant if species or habitats of high concern are adversely affected over relatively large areas, or disturbances cause reductions in population size or distribution of a species of special concern. A habitat perspective is used to provide a framework for analysis of general classes of impacts (i.e., removal of critical habitat, noise, human disturbance).

Determination of the significance of wetland impacts is based on (1) the function and value of the wetland, (2) the proportion of the wetland that would be affected relative to the occurrence of similar wetlands in the region, (3) the sensitivity of the wetland to proposed activities, and (4) the duration of ecological ramifications. Impacts on wetland resources are considered significant if high-value wetlands would be adversely affected.

Ground disturbance and noise associated with construction activities might directly or indirectly cause potential impacts on biological resources. Direct impacts from ground disturbance were evaluated by identifying the types and locations of potential ground-disturbing activities in correlation to important biological resources. Mortality of individuals, habitat removal, and damage or degradation of habitats are impacts that might be associated with ground-disturbing activities.

Noise associated with a proposed action might be of sufficient magnitude to result in the direct loss of individuals and reduce reproductive output within certain ecological settings. Ultimately, extreme cases of such stresses could have the potential to lead to population declines or local or regional extinction. To evaluate impacts, considerations were given to the number of individuals or critical species involved, amount of habitat affected, relationship of the area of potential effect to total available habitat within the region, type of stressors involved, and magnitude of the effects.

As a requirement under the ESA, Federal agencies must provide documentation that ensures that agency actions do not adversely affect the existence of any threatened or endangered species. The ESA requires that all Federal agencies avoid "taking" threatened or endangered species, which includes jeopardizing threatened or endangered species habitat. Section 7 of the ESA establishes a consultation process with the USFWS that ends with USFWS concurrence or a determination of the risk of jeopardy from a Federal agency project.

4.4.2 Proposed Action

Generally, the actions proposed for implementation under the INRMP that have the potential to impact listed or candidate species include:

- Monitoring of gopher tortoise populations.
- Surveys for rare, threatened, and endangered species.
- Prescribed burning of approximately 800 acres annually.
- Aquatic weed control of approximately 100 acres annually.
- Invasive species control, 55 acres total (2015: 40 acres; 2016: 5 acres; 2017: 5 acres; 2018: 5 acres)
- Hardwood mid-story control through chemical herbicide applications, 250 acres total (2015: 235 acres; 2016: 15 acres)
- Hardwood mid-story control through mechanical means, 105 acres total (2015: 105 acres)
- Timber harvest, selective thinning, 123 acres total (2015: 89 acres; 2016: 34 acres)
- Timber harvest, clearcut/regeneration, 56 acres (2015: 16 acres; 2016: 20 acres; 2018: 20 acres)
- Timber harvest, seed tree regeneration, 104 acres (2015: 42 acres; 2017: 46 acres; 2018: 16 acres)
- Site preparation and planting of longleaf pine, 12 acres total (2016).

Long-term, beneficial impacts on protected species and their habitat would be expected. Several projects described in the INRMP consist of conducting surveys or studies of Moody AFB's protected species (e.g., gopher tortoise, bald eagle, and newly listed species) and habitat (e.g., Dudley's Hammock). Information obtained from these efforts would help installation personnel properly manage resources. Dudley's Hammock contains the only extant populations of a state-listed "unusual" plant species on Moody AFB (green-fly orchid) and the federally and state-listed threatened eastern indigo snake has been occasionally sighted on Dudley's Hammock. Assessment of populations at Moody AFB would provide conditions and trends, which would allow management practices to be applied where and when needed. Implementation of routine assessment and monitoring for these special status species provides a method for protecting these species and provides a baseline of data that could be used to prioritize projects and identify the most efficient allocation of resources.

Short-term, minor, adverse impacts on wildlife habitat could occur with the habitat improvement activities; however, these projects would benefit wildlife species occupying those areas in the long term. Implementation of certain projects described in the INRMP (e.g., selective thinning, midstory control, clearcut, and invasive species control) could result in minor, but temporary, disturbance to vegetation. In the long term, however, implementation of the INRMP would result in improved habitat conditions.

Because of fire exclusion and poor management, many forest stands on the installation have a substantial amount of mid-story hardwood competition, which impedes the application of prescribed fire and negatively affects RTE species, especially the gopher tortoise. The proposed control of mid-story hardwoods (see **Figure 4-1**) through mechanical and chemical techniques followed by annual applications of prescribed burns would result in short-term disturbance to tortoise habitat but would result in beneficial impacts on tortoise habitat in the long-term.

The forestry program has been focusing on the restoration of native pine forests on the installation. The proposed silvicultural activities, including artificial and natural regeneration of native pines (see **Figure 4-2**) and prescribed burning, would result in beneficial impacts on habitat for wildlife and protected species on Moody AFB in the long term.

The timber harvests are used to enhance the health of the forests and improve habitat for RTE species. The proposed selective thinning (see **Figure 4-3**) to remove smaller, diseased, and less desirable trees would benefit the gopher tortoise by opening the canopy, promoting herbaceous growth, and increasing the effectiveness of prescribed burning.

As discussed, the Proposed Action would have short-term, minor adverse impacts and long-term beneficial impacts on biological resources. Therefore, there would be no significant impacts on biological resources from the Proposed Action.

4.4.3 No Action Alternative

Under the No Action Alternative, management of natural resources would continue as characterized in the Moody AFB 2007 INRMP. Long-term, minor, adverse impacts on biological resources would be expected to continue. The No Action Alternative does not provide for the formal implementation of an updated habitat assessment and monitoring program for RTE species and wildlife populations. In addition, the No Action Alternative does not establish forest management measures to protect and enhance native habitats by preventing or minimizing potential impacts of mid-story hardwood competition and invasive species encroachment. This would result in the continuing decline in the quality and complexity of the habitats on Moody AFB. There would be no significant impacts on biological resources from the No Action Alternative.

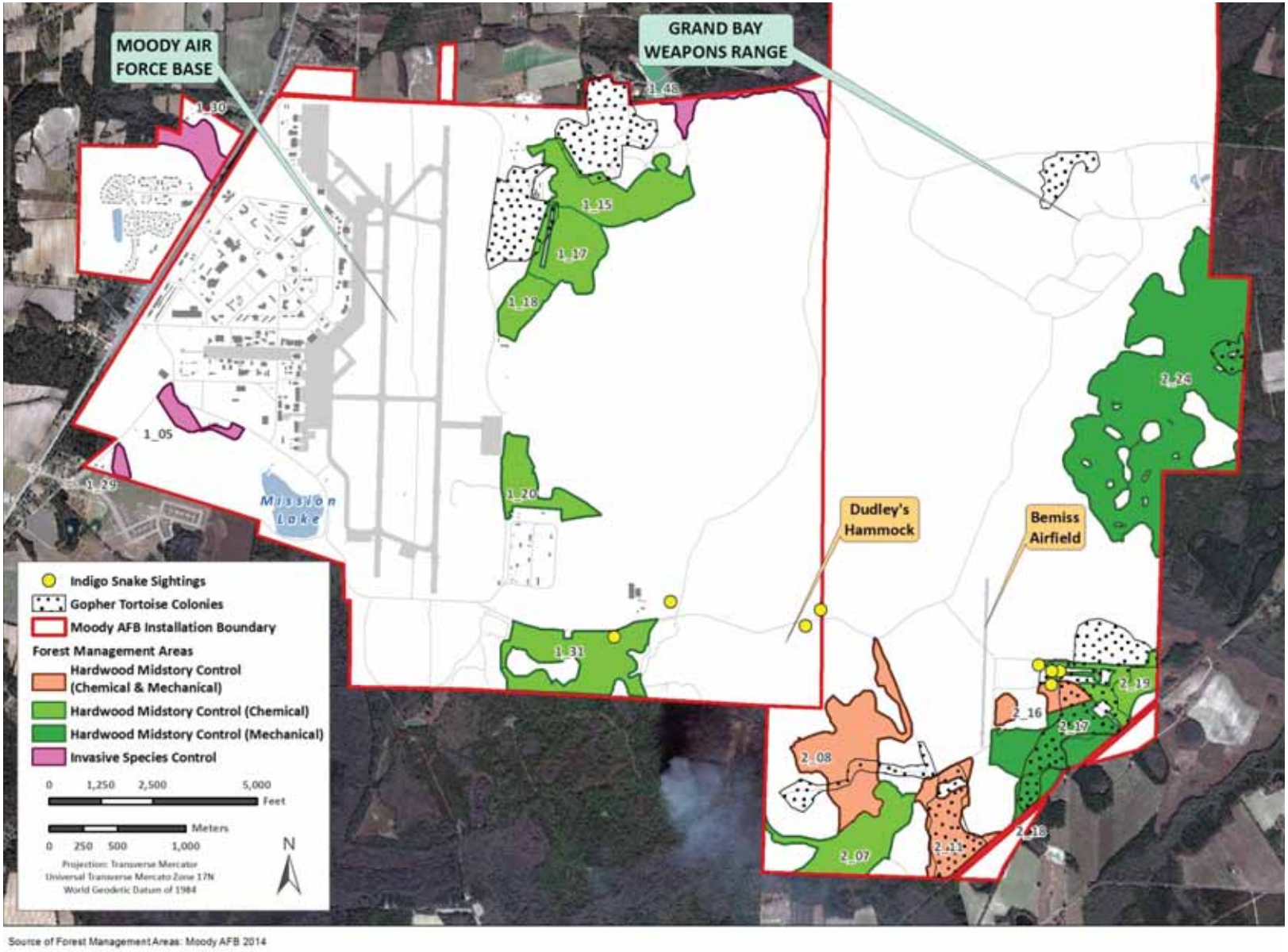


Figure 4-1. Mid-story Hardwood and Invasive Species Control on Moody AFB

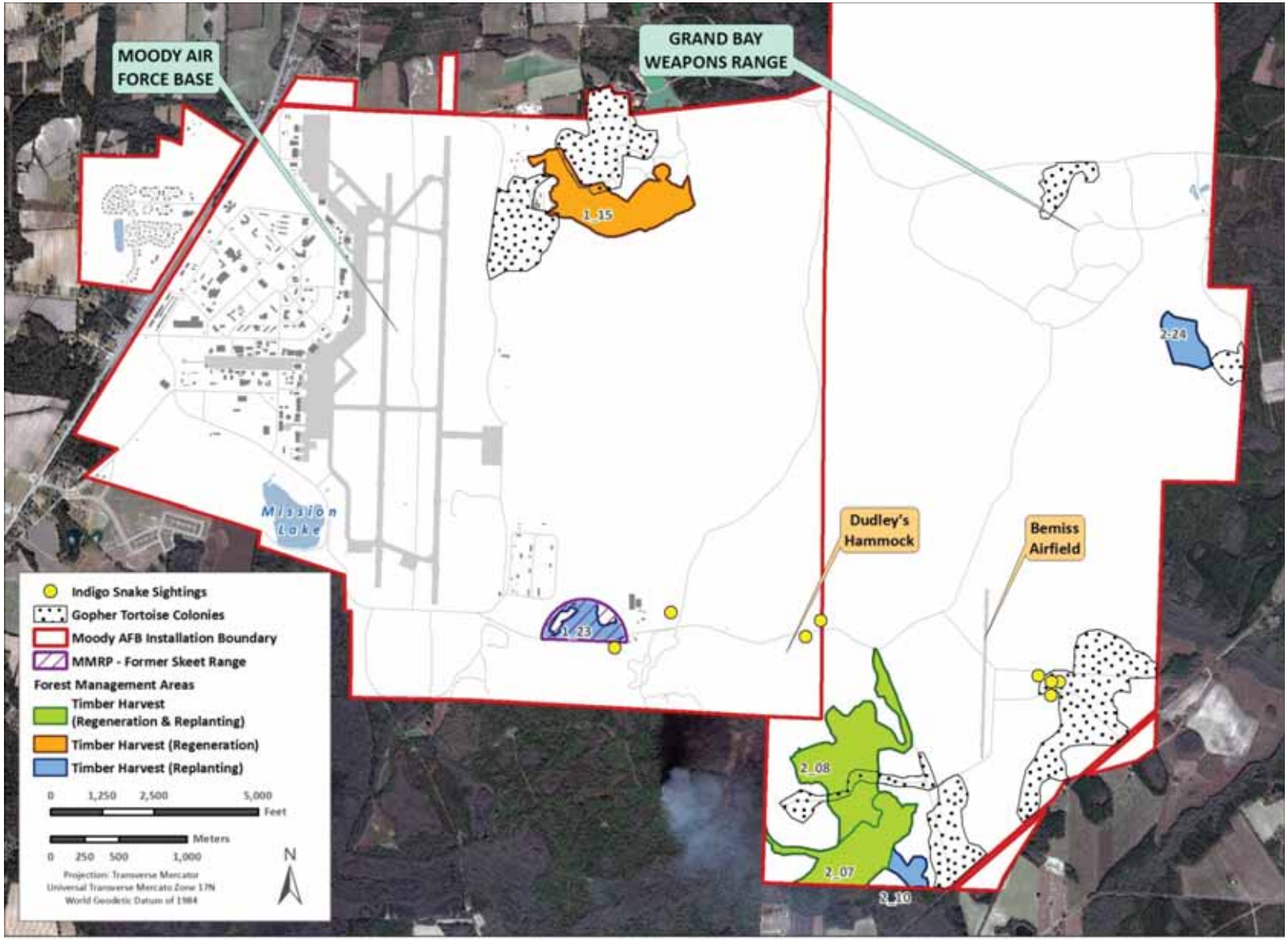


Figure 4-2. Timber Harvest with Regeneration and Replanting on Moody AFB

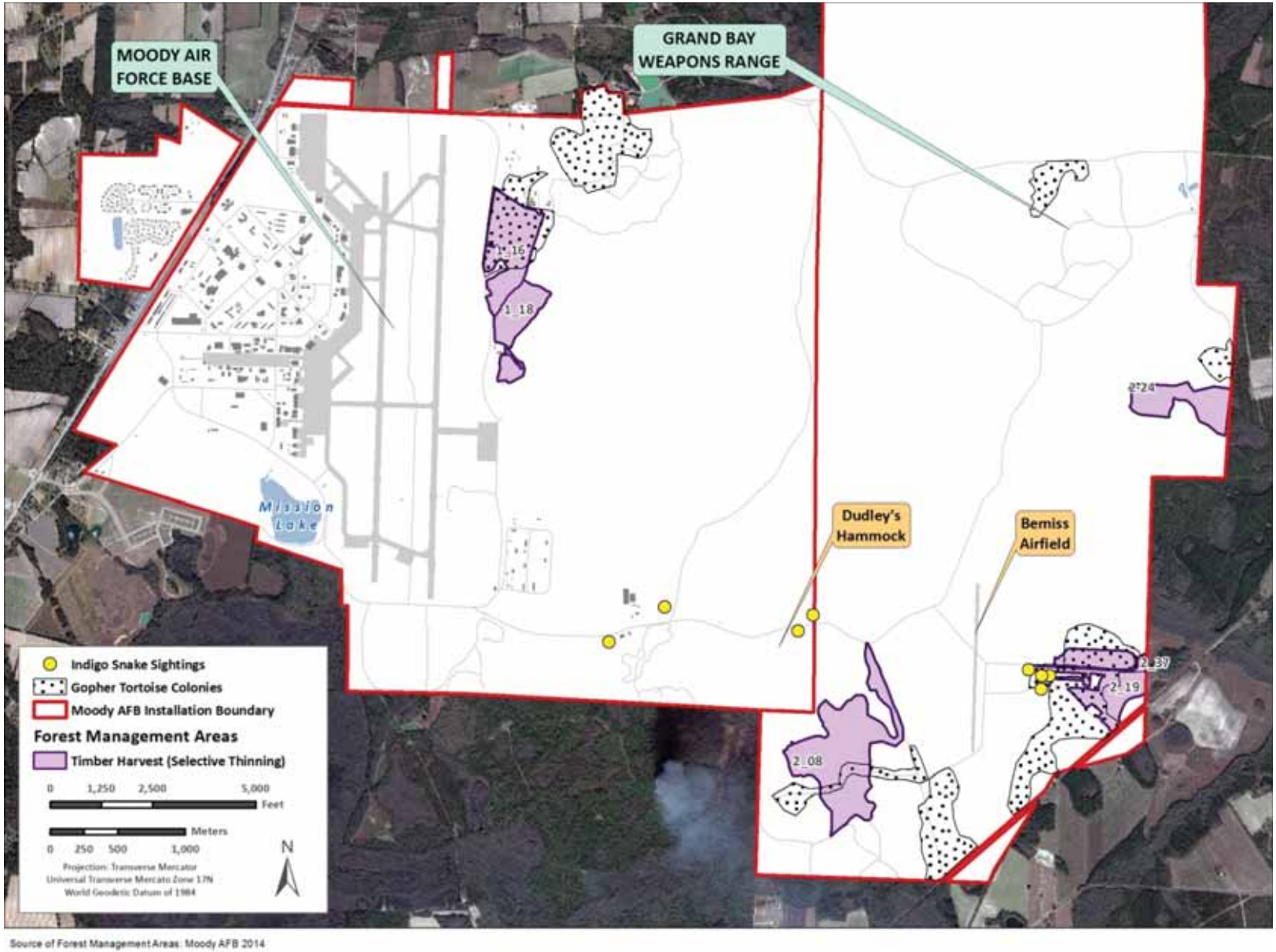


Figure 4-3. Timber Harvest with Selective Thinning on Moody AFB

4.5 Safety

4.5.1 Evaluation Criteria

The evaluation criteria for safety assess the increased risks associated with a Proposed Action. An impact would be significant if implementation of the Proposed Action were to substantially increase risks associated with the safety of personnel, contractors, military personnel, or the local community; substantially hinder the ability to respond to an emergency; or introduce a new health or safety risk for which the installation is not prepared or does not have adequate management and response plans in place.

4.5.2 Proposed Action

Personnel Safety and Occupational Health. The Proposed Action would involve projects that have been completed before (such as demographic studies and wetlands monitoring plans) and projects that would be similar to those previously implemented. Activities would continue to be completed in accordance with applicable USAF safety regulations and USAF OSHA requirements.

Environmental Restoration Program. Land management activities would be coordinated with the ERP manager to ensure no impacts to wells or other ERP activities. The one MMRP site at Moody AFB currently being investigated is the site of a former skeet range and has also been identified for a natural resource project (see **Figure 4-2**). Under the Proposed Action, the preparation and planting of longleaf pine, Stand 1-23 (Project #33 in **Table 2-1**) is proposed at the MMRP site. However, site preparation and tree planting would not begin until the environmental restoration of MMRP site is complete. Consequently, no impacts would occur to the ERP at Moody AFB under the Proposed Action.

Fire Management. As previously discussed, Moody AFB has a wildland fire management program that involves both prescribed burning and the control of wildfires in accordance with AFI 32-7064. Prescribed burning has occurred previously at the installation; under the Proposed Action prescribed burning and wildland fire management procedures would not change. The implementation of prescribed burns under specified conditions decreases wildfire risk, severity, and danger.

BASH. Under the Proposed Action, there are numerous projects that would have a beneficial impact on BASH. Prescribed burning, hardwood mid-story control, and timber thinning would potentially reduce habitat for bird species. The Proposed Action also includes seed tree regeneration; however, it takes years for trees to mature to a size that would be useful for bird habitat. In addition, tree regeneration projects would be balanced with tree trimming and reduction. Projects under the Proposed Action also include the purchase and maintenance of hunting stands would aid in wildlife control. Consequently, implementation of the Proposed Action would reduce bird habitat and aid in wildlife control at appropriate areas on the installation resulting in a beneficial impact to BASH.

There would be no significant impacts on safety from the Proposed Action.

4.5.3 No Action Alternative

Under the No Action Alternative, long-term, minor, adverse impacts would be expected. A wildfire burning out of control is more dangerous than prescribed fires. Additionally, management measures to reduce BASH risk would not be implemented, thereby resulting in an increase in strike hazards near the airfield. Additional safety measures would continue as described in the Moody AFB 2007 INRMP and conditions would remain as discussed in **Section 3.5.2**. There would be no significant impacts on safety from the No Action Alternative.

4.6 Cultural Resources

4.6.1 Evaluation Criteria

Adverse impacts on cultural resources can include physically altering, damaging, or destroying all or part of a resource; altering characteristics of the surrounding environment that contribute to the resource's significance; introducing visual or audible elements that are out of character with the property or that alter its setting; general neglect of the resource to the extent that it deteriorates or is destroyed; or the sale, transfer, or lease of the property out of the agency ownership (or control) without adequate legally enforceable restrictions or conditions to ensure preservation of the property's historic significance.

4.6.2 Proposed Action

Under the Proposed Action, natural resources management activities would be coordinated with the installation cultural resources manager to minimize potential impacts to installation cultural resources. Activities that may generate ground disturbances, such as timber harvesting, site preparation, planting, and mid-story hardwood removal are not conducted in known archeological areas without consultation with the installation cultural resources manager and State Historic Preservation Officer (SHPO). In recent commercial timber sales, archeological sites have been identified in the field as "no access" areas. Moody AFB completed consultation with the Georgia SHPO on 21 May 2015. The Georgia SHPO concurred that the proposed actions in the INRMP will have no adverse effect on historic properties that are listed or eligible for listing in the National Register of Historic Places.

Native American Indian tribes with interests in the region were invited to consult on potential impacts as a result of the Proposed Action during the preparation of this EA. Initial letters were sent to tribal leaders on 8 August 2014 and corresponding follow-up letters were sent on 5 September 2014. Those tribes with Historic Preservation Offices were also contacted. Phone calls were made to tribes who had yet to respond after follow-up letters were sent. The Alabama-Quassarte Tribal Town, the Cherokee Nation, and the Caddo Nation responded by e-mail that they do not have interests in this area. The Seminole Tribe of FL responded by phone that they have refined their area of concern to just within the borders of Florida. The United Keetoowah Band of Cherokee Indians deferred to the Muscogee (Creek) Nation via an e-mail message. The Muscogee (Creek) Nation requested additional information on archeological sites in the area, which was provided and formal concurrence that there would be no impact was received on 24 July 2015. All formal correspondence with Native American Indian tribes is listed in **Appendix B** and consultations are complete.

There would be no significant impacts on cultural resources from the Proposed Action.

4.6.3 No Action Alternative

Natural resources management activities in the vicinity of cultural resources would continue as described in the Moody AFB 2007 INRMP and conditions would remain as discussed in **Section 3.6.2**. Therefore, there would be no significant impacts on cultural resources from the No Action Alternative.

4.7 Other NEPA Considerations

4.7.1 Unavoidable Adverse Impacts

Unavoidable adverse impacts would result from implementation of the Proposed Action. None of these impacts would be significant.

Energy. The use of nonrenewable resources is an avoidable occurrence, although not considered significant. The Proposed Action would require the continued use of fossil fuels, a nonrenewable natural resource, during project activities. Energy supplies, although relatively small, would be committed to the Proposed Action.

Geology and Soils. Project activities would result in temporary soil disturbance; however, implementation of BMPs and erosion-control measures would limit the environmental consequences. Although soil disturbance would be unavoidable, the impact on geology and soils would not be expected to be significant.

4.7.2 Relationship between Short-term Uses and Long-term Productivity

Short-term uses of productivity include direct construction-related disturbances and impacts associated with an increase in population and activity that occurs over a period of less than 5 years. Long-term uses of productivity include those impacts occurring over a period of more than 5 years, including permanent resource loss.

Implementation of the Proposed Action would not require short-term resource uses that would result in long-term compromises of productivity. The Proposed Action would not result in a significant change in construction activities or an increase in population. In addition, it would not represent a significant loss of open space or intensification of land use at Moody AFB and the surrounding area. Therefore, it is anticipated that the Proposed Action would not result in any cumulative impacts on land use or aesthetics.

4.7.3 Irreversible and Irretrievable Commitment of Resources

Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the impacts that the use of these resources would have on future generations. Irreversible impacts primarily result from use or destruction of a specific resource that cannot be replaced within a reasonable timeframe (e.g., energy and minerals). Irreversible and irretrievable commitments of resources usually result from implementation of actions that involve the consumption of material resources used for construction, energy resources, and human labor resources. The use of these resources is considered to be permanent. Other than the minor use of fuels for motor vehicles, no other irreversible or irretrievable commitments of resources are expected.

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5. Cumulative Impacts

CEQ defines cumulative impacts as the "impacts on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 CFR §1508.7). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time by various agencies (Federal, state, and local) or individuals. Informed decisionmaking is served by consideration of cumulative impacts resulting from projects that are proposed, under construction, recently completed, or anticipated to be implemented in the reasonably foreseeable future. Reasonably foreseeable future actions consist of activities that have been approved and can be evaluated with respect to their effects.

This section briefly summarizes past, present, and reasonably foreseeable future projects within the same general geographic and time scope as the Proposed Action. Projects considered for the cumulative impacts analysis are listed in **Table 5-1**. The cumulative impacts scenario is then added to the Proposed Action's impacts on the individual resource areas analyzed in **Sections 4.1** through **4.6** to determine the cumulative impacts of the Proposed Action. In accordance with CEQ regulations, the current effects of past actions are considered in aggregate as part of the baseline as appropriate for each resource area without delving into the historical details of individual past actions.

5.1 Air Quality

Several actions listed in **Table 5-1** (actions 1, 3, 4, 6, 7, 8, 11, 12, and 14) have the potential to cumulatively impact air quality. Under the Proposed Action, emissions would increase slightly for the duration of the activities, and then return to baseline conditions. The estimated annual air emissions would not be expected to trigger any air quality thresholds of significance because emissions would be less than 1 percent of the regional inventory for each pollutant. Consequently, emissions generated during the Proposed Action would not change the Lanier and Lowndes Counties AQCR attainment status.

Emissions from previous EAs completed in 2013 for Grand Bay Weapons Range, Bemiss Field, and Moody Explosive Ordnance Disposal Range Operations are reflected in the baseline data presented in **Section 3.1**. Emissions from the majority of projects with potential cumulative air quality impacts (such as the planned Personnel Recovery Campus action and infrastructure projects at Moody AFB) would be produced during construction activities and would be temporary. While emissions from aircraft operations would increase slightly as a result of the Bemiss Field Unimproved Landing Zone action, the A-10 drawdown action, if approved, would have the potential to significantly decrease aircraft emissions at Moody AFB. Therefore, cumulative impacts on air quality would not be significant.

5.2 Geology and Soils

Nine actions listed in **Table 5-1** (actions 3, 4, 6, 7, 9, 11, 12, 13, and 15) have the potential to cumulatively impact geology and soils. Under the Proposed Action, a soil erosion and sedimentation program would be implemented reducing impacts on geologic resources. Consequently, soil stabilization would increase and there would be beneficial impacts to geology and soils.

Most of the projects considered for cumulative impacts associated with geology and soils involve ground-disturbing activities such as construction. Ground-disturbing activities generally require the use of BMPs, which mitigate potential impacts to soils. Projects that involve land and range expansions would impact small areas of land intermittently. Considering the beneficial impacts from the Proposed Action

and the use BMPs that would be required, cumulative adverse impacts on geology and soils would not be significant.

5.3 Water Resources

Similar to geology and soils, nine actions listed in **Table 5-1** (actions 3, 4, 6, 7, 9, 11, 12, 13, and 15) have the potential to cumulatively impact water resources. Under the Proposed Action, water resources could be negatively affected by land disturbing activities, including silvicultural activities, mechanical midstory removal, and prescribed burning. The use of herbicides could also negatively impact surface and ground water quality. However, BMPs, including wetland and stream buffers, would be applied and herbicides would be applied in accordance with chemical label requirements.

The Water/Waste Water Treatment Partnering Initiative would aid in meeting future water and wastewater demands at Moody AFB and in Lowndes County.

Several projects considered for cumulative resources would result in the conversion of wetlands to other land uses. The Airfield Improvements action would convert approximately 31 acres of wetlands, and the Personnel Recovery Campus action could fill in 10 acres of wetlands. In addition, infrastructure projects could impact small amounts of wetland areas. However, mitigations measures would be developed through the Section 404 permitting process for each of these projects. Mitigation measures could include purchasing wetland mitigation credits at a USACE-approved mitigation bank in the service area where Moody AFB is located. Under the Proposed Action, long-term, beneficial impacts on surface waters and wetlands would be expected as a result of the INRMP implementation. Given the development of mitigation measures and the beneficial impacts of the INRMP implementation, no significant cumulative adverse impacts to wetlands would be expected.

5.4 Biological Resources

Nine actions listed in **Table 5-1** (actions 3, 4, 6, 7, 9, 11, 12, 13, and 15) have the potential to cumulatively impact biological resources. Long-term, beneficial impacts on wildlife and special status species and their habitat would be expected. Several projects described in the INRMP consist of conducting or updating surveys or inventories at Moody AFB. Information obtained from these efforts would help installation personnel properly manage resources.

Most of the projects considered for cumulative impacts involve ground-disturbing activities such as construction. Implementation of these projects (e.g., additional housing and facility replacement) could result in minor, but temporary, disturbances to vegetation. In the long term, however, implementation of the Proposed Action would result in improved habitat conditions. Therefore, cumulative impacts on biological resources would not be significant.

5.5 Safety

The majority of the projects listed in **Table 5-1** have the potential to cumulatively impact safety. Activities under the Proposed Action would not significantly impact personnel or fire management safety; there would be a beneficial impact to BASH. The Expansion of Off-Base Helicopter Landing Zones action, the Airfield Improvements action, and the Bemiss Field Unimproved Landing Zone action propose actions to improve safety at Moody AFB, and the A-10 Drawdown action, if approved, would have the potential to decrease BASH. Projects listed in **Table 5-1** are required to be completed in accordance with applicable USAF safety regulations and USAF Occupational Safety and Health requirements. Therefore, cumulative impacts on safety would not be significant.

5.6 Cultural Resources

There are no actions in **Table 5-1** that would impact cultural resources at Moody AFB. In addition, the Proposed Action would not impact cultural resources; therefore, there would be no cumulative impacts to cultural resources.

Table 5-1. Actions Considered under Cumulative Impacts

Action #	Action	Proponent/ Location	Timeframe	Description	Resource Interaction*
1	Grand Bay Weapons Range, Bemiss Field, and Moody Explosive Ordnance Disposal Range Operations	USAF/Moody AFB, Grand Bay Weapons Range, Bemiss Field	Past	An EA has been completed for increased ordnance use of air-to-ground training for the 23d Fighter Group, 41st Rescue Squadron (RQS), and 71 RQS, along with extending Grand Bay Weapons Range operating hours to support expanded ground-based training as needed.	Air Quality, Safety, Hazardous Materials and Waste
2	Expansion of Off-base Helicopter Landing Zones	USAF/Private land parcels in Echols and Lanier County	Past	An EA has been completed for the establishment of eight new helicopter landing zones, three in Echols County and five in Lanier County. The activities involve helicopter landings, ground troop training, and flyovers by helicopters and fixed-wing aircraft. The land areas for the helicopter landing zones are privately owned and are utilized by the USAF under lease agreements with the respective owners. There would be no increase in aircraft operations.	Safety
3	Military Family Housing Privatization Initiative	USAF/Moody AFB and a parcel of land in Valdosta, GA	Past	An EA has been completed for privatized military family housing at Moody AFB. It includes the development of 11 housing units within a 15-acre parcel on Moody AFB, and 90 housing units within approximately 60 acres of a113-acre parcel in nearby Valdosta, Georgia. The project includes additional utility connections, increased impervious surfaces, natural buffers, recreational facilities, and the filling of several acres of wetlands.	Air Quality, Geology and Soils, Water Resources, Biological Resources, Hazardous Materials and Waste
4	Airfield Improvements	USAF/Moody AFB	Past	An EA has been completed for tree-clearing activities and conversion of wetland areas around the southeastern side of the airfield to airfield grass at Moody AFB to meet safety criteria for airfield design, reduce obstructions on the airfield, increase safety for pilots, and reduce BASH risks. Approximately 97 acres of trees will be removed and 62 acres, 31 of which are wetlands, will be converted to airfield grass.	Air Quality, Geology and Soils, Water Resources, Biological Resources, Safety

Action #	Action	Proponent/ Location	Timeframe	Description	Resource Interaction*
5	Lower Pattern Altitude	USAF/Airspace immediately surrounding Moody AFB	Past	An EA has been completed for changes to the A-10 VFR overhead flight pattern from 2,000 feet above ground level to 1,500 feet in the airspace immediately surrounding the Moody AFB airfield. This project does not affect instrument flight rule overhead flight patterns.	Safety
6	Infrastructure Projects on-base	USAF/Moody AFB	Present	Some of the infrastructure projects include replacing a four-bay hangar, the fire station, Security Forces Facility, aircraft parking ramp, and consolidation of Age shops.	Air Quality, Geology and Soils, Water Resources, Biological Resources, Safety, Hazardous Materials and Waste
7	Personnel Recovery Campus	USAF/Moody AFB and private land adjacent to the northern boundary	Present and Future	An EA is being completed for construction of facilities for the Combat Search and Rescue training program infrastructure. The project involves the construction of several buildings, a four-bay hangar, and helicopter parking.	Air Quality, Geology and Soils, Water Resources, Biological Resources, Safety, Hazardous Materials and Waste
8	A-10 Drawdown	USAF/Moody AFB	Future	The USAF is considering drawing down and retiring the entire fleet of A-10s over the next 2–5 years, which would remove all A-10s from Moody AFB if approved.	Air Quality, Safety, Hazardous Materials and Waste
9	Bemiss Field ULZ project	USAF/Moody AFB	Present and Future	An EA is being completed for tree clearing around the runways, heavy weight drops, and increased aircraft operations.	Air Quality, Geology and Soils, Water Resources, Biological Resources, Safety, Hazardous Materials and Waste
10	Changes to Grand Bay Weapons Range	USAF/Grand Bay Weapons Range	Present and Future	An EA is being completed for an action that involves changing Grand Bay Weapons Range from visual flight rules to visual flight rules-instrument flight rules.	Safety
11	Northeast Training Complex	USAF/Moody AFB	Present and Future	An EA is being completed for a training complex for USAF Security Forces' utilization of Counter-Improvised Explosive Device (C-IED) Training Lanes. This action would move the training site to a more suitable location from its current location on the north edge of Moody AFB.	Geology and Soils, Water Resources, Biological Resources, Safety, Hazardous Materials and Waste

Action #	Action	Proponent/ Location	Timeframe	Description	Resource Interaction*
12	South Airfield Area Development	USAF/Moody AFB	Future	This conceptual plan would create a consolidated campus for the South Airfield that integrates new and existing facilities, pedestrian and vehicle circulation, parking and roads, and gathering spaces into the surrounding built and natural environment.	Air Quality, Geology and Soils, Water Resources, Biological Resources, Safety, Hazardous Materials and Waste
13	Capital Projects on-base	USAF/Moody AFB	Future	Projects include the renovation of the Airman's dining facility in Building 571; 23d Fighter Group parking for Building 706; building maintenance projects including new roofs, exterior paint, interior renovations, utility repairs, and building demolitions; and road and airfield maintenance projects including paving, rubber removal, and restriping.	Air Quality, Geology and Soils, Water Resources, Biological Resources, Safety, Hazardous Materials and Waste
14	Water/Waste Water Treatment Partnering Initiative	Moody AFB and Lowndes County	Future	Public-Public/Public-Private (P4) Water/Waste Water Treatment Partnering Initiative with Lowndes County to meet future water and wastewater demands.	Water Resources
15	Grand Bay Weapons Range Expansion	Moody AFB	Future	Acquire land to be used for training requirements. Land would most likely be southwest and contiguous to the installation.	Geology and Soils, Water Resources, Biological Resources

*Only includes resources that were analyzed as part of this Proposed Action

6. List of Preparers

This EA has been prepared by HDR under the direction of AFCEC and the 23d Wing at Moody AFB. The individuals who contributed to the preparation of this document are listed as follows.

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Years of Experience: 20

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APPENDIX A

APPLICABLE LAWS, REGULATIONS, POLICIES, AND PLANNING CRITERIA

Appendix A
Applicable Laws, Regulations, Policies, and Planning Criteria

When considering the affected environment, the various physical, biological, economic, and social environmental factors must be considered. In addition to the National Environmental Policy Act (NEPA), there are other environmental laws and Executive Orders (EOs) to be considered when preparing environmental analyses. These laws are summarized below.

NOTE: This is not a complete list of all applicable laws, regulations, policies, and planning criteria potentially applicable to documents, however, it does provide a general summary for use as a reference.

Airspace Management

Airspace management procedures assist in preventing potential conflicts or accidents associated with aircraft using designated airspace in the United States, including restricted military airspace. Airspace management involves the coordination, integration, and regulation of the use of airspace. The Federal Aviation Administration (FAA) has overall responsibility for managing airspace through a system of flight rules and regulations, airspace management actions, and air traffic control procedures. All military and civilian aircraft are subject to Federal Aviation Regulations. The FAA's *Aeronautical Informational Manual* defines the operational requirements for each of the various types or classes of military and civilian airspace.

Some military services have specific guidance for airspace management. For example, airspace management in the U.S. Air Force (USAF) is guided by Air Force Instruction (AFI) 13-201, *Air Force Airspace Management*. This AFI provides guidance and procedures for developing and processing special use airspace. It covers aeronautical matters governing the efficient planning, acquisition, use, and management of airspace required to support USAF flight operations. It applies to activities that have operational or administrative responsibility for using airspace, establishes practices to decrease disturbances from flight operations that might cause adverse public reaction, and provides flying unit commanders with general guidance for dealing with local problems.

Noise

Federal, state, and local governments have established noise guidelines and regulations for the purpose of protecting citizens from potential hearing damage and from various other adverse physiological, psychological, and social effects associated with noise. The Noise Control Act of 1972, as amended by the Quiet Communities Act of 1978, requires compliance with state and local noise laws and ordinances.

The U.S. Department of Housing and Urban Development (HUD), in coordination with the Department of Defense (DOD) and the FAA, has established criteria for acceptable noise levels for aircraft operations relative to various types of land use.

The USAF's Air Installation Compatible Use Zone (AICUZ) Program, (AFI 32-7063), provides guidance to air bases and local communities in planning land uses compatible with airfield operations. The AICUZ program describes existing aircraft noise and flight safety zones on and near USAF installations.

Land Use

The term "land use" refers to real property classifications that indicate either natural conditions or the types of human activities occurring on a defined parcel of land. In many cases, land use descriptions are codified in local zoning laws. However, there is no nationally recognized convention or uniform terminology for describing land use categories.

Land use planning in the USAF is guided by *Land Use Planning Bulletin, Base Comprehensive Planning* (HQ USAF/LEEVX, 1 August 1986). This document provides for the use of 12 basic land use types found on a USAF installation. In addition, land use guidelines established by the HUD and based on findings of the Federal Interagency Committee on Noise are used to recommend acceptable levels of noise exposure for land use.

Air Quality

The Clean Air Act (CAA) of 1970, and Amendments of 1977 and 1990, recognizes that increases in air pollution result in danger to public health and welfare. To protect and enhance the quality of the Nation's air resources, the CAA authorizes the U.S. Environmental Protection Agency (USEPA) to set six National Ambient Air Quality Standards (NAAQS) that regulate carbon monoxide, lead, nitrogen dioxide, ozone, sulfur dioxide, and particulate matter pollution emissions. The CAA seeks to reduce or eliminate the creation of pollutants at their source, and designates this responsibility to state and local governments. States are directed to utilize financial and technical assistance and leadership from the Federal Government to develop implementation plans to achieve NAAQS. Geographic areas are officially designated by the USEPA as being in attainment or nonattainment for pollutants in relation to their compliance with NAAQS. Geographic regions established for air quality planning purposes are designated as Air Quality Control Regions (AQCRs). Pollutant concentration levels are measured at designated monitoring stations within the AQCR. An area with insufficient monitoring data is designated as unclassified. Section 309 of the CAA authorizes USEPA to review and comment on impact statements prepared by other agencies.

An agency should consider what effect an action might have on NAAQS due to short-term increases in air pollution during construction and long-term increases resulting from changes in traffic patterns. For actions in attainment areas, a federal agency could also be subject to USEPA's Prevention of Significant Deterioration (PSD) regulations. These regulations apply to new major stationary sources and modifications to such sources. Although few agency facilities will actually emit pollutants, increases in pollution can result from a change in traffic patterns or volume. Section 118 of the CAA waives federal immunity from complying with the CAA and states all federal agencies will comply with all federal- and state-approved requirements.

The General Conformity Rule requires that any federal action meet the requirements of a State Implementation Plan or Federal Implementation Plan. More specifically, CAA conformity is ensured when a federal action does not cause a new violation of the NAAQS; contribute to an increase in the frequency or severity of violations of NAAQS; or delay the timely attainment of any NAAQS, interim progress milestones, or other milestones toward achieving compliance with the NAAQS.

The General Conformity Rule applies only to actions in nonattainment or maintenance areas and considers both direct and indirect emissions. The rule applies only to federal actions that are considered "regionally significant" or where the total emissions from the action meet or exceed the *de minimis* thresholds presented in 40 Code of Federal Regulations (CFR) §93.153. If a federal action does not meet or exceed the *de minimis* thresholds and is not considered regionally significant, then a full Conformity Determination is not required.

On 13 May 2010, the USEPA issued the Greenhouse Gas (GHG) Tailoring Rule that sets thresholds for GHG emissions from large stationary sources. The new GHG emissions thresholds for large stationary sources define when permits under the New Source Review Prevention of PSD and Title V Operating Permit programs are required for new and existing industrial facilities. Beginning 2 January 2011, large industrial facilities that have CAA permits for non-GHG emissions must also include GHGs in these permits. Beginning 1 July 2011, all new construction or renovations that increase GHG emissions by 75,000 tons of carbon dioxide or equivalent per year or more will be required to obtain construction permits for GHG emissions. Operating permits will be needed by all sources that emit GHGs above 75,000 tons of carbon dioxide or equivalent per year beginning in July 2011.

Health and Safety

Human health and safety relates to workers' health and safety during demolition or construction of facilities, or applies to work conditions during operations of a facility that could expose workers to conditions that pose a health or safety risk. The federal Occupational Safety and Health Administration (OSHA) issues standards to protect persons from such risks, and the DOD and state and local jurisdictions issue guidance to comply with these OSHA standards. Safety also can refer to safe operations of aircraft or other equipment.

AFI 91-202, *USAF Mishap Prevention Program*, implements Air Force Policy Directive 91-2, *Safety Programs*. It establishes mishap prevention program requirements (including the Bird/Wildlife Aircraft Strike Hazard [BASH] Program), assigns responsibilities for program elements, and contains program management information.

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks* (23 April 1997), directs federal agencies to make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children. Federal agencies must also ensure that their policies, programs, activities, and standards address disproportionate risks to children that result from environmental health or safety risks.

Geology and Soil Resources

Recognizing that millions of acres per year of prime farmland are lost to development, Congress passed the Farmland Protection Policy Act (FPPA) to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland (7 CFR Part 658). Prime farmland is described as soils that have a combination of soil and landscape properties that make them highly suitable for cropland, such as high inherent fertility, good water-holding capacity, and deep or thick effective rooting zones, and that are not subject to periodic flooding. Under the FPPA, agencies are encouraged to conserve prime or unique farmlands when alternatives are practicable. Some activities that are not subject to the FPPA include federal permitting and licensing, projects on land already in urban development or used for water storage, construction for national defense purposes, or construction of new minor secondary structures such as a garage or storage shed.

Water Resources

The Clean Water Act (CWA) of 1977 is an amendment to the federal Water Pollution Control Act of 1972, is administered by USEPA, and sets the basic structure for regulating discharges of pollutants into United States' waters. The CWA requires USEPA to establish water quality standards for specified contaminants in surface waters and forbids the discharge of pollutants from a point source into navigable waters without a National Pollutant Discharge Elimination System permit. National Pollutant Discharge Elimination System permits are issued by USEPA or the appropriate state if it has assumed responsibility.

Section 404 of the CWA establishes a federal program to regulate the discharge of dredge and fill material into waters of the United States. Section 404 permits are issued by the U.S. Army Corps of Engineers. Waters of the United States include interstate and intrastate lakes, rivers, streams, and wetlands that are used for commerce, recreation, industry, sources of fish, and other purposes. The objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Each agency should consider the impact on water quality from actions such as the discharge of dredge or fill material into U.S. waters from construction, or the discharge of pollutants as a result of facility occupation.

Section 303(d) of the CWA requires states and USEPA to identify waters not meeting state water quality standards and to develop Total Maximum Daily Loads (TMDLs). A TMDL is the maximum amount of a pollutant that a waterbody can receive and still be in compliance with state water quality standards. After determining TMDLs for impaired waters, states are required to identify all point and nonpoint sources of pollution in a watershed that are contributing to the impairment and to develop an implementation plan that will allocate reductions to each source to meet the state standards. The TMDL program is currently the Nation's most comprehensive attempt to restore and improve water quality. The TMDL program does not explicitly require the protection of riparian areas. However, implementation of the TMDL plans typically calls for restoration of riparian areas as one of the required management measures for achieving reductions in nonpoint source pollutant loadings.

The Coastal Zone Management Act (CZMA) of 1972 declares a national policy to preserve, protect, and develop, and, where possible, restore or enhance the resources of the Nation's coastal zone. The coastal zone refers to the coastal waters and the adjacent shorelines, including islands, transitional and intertidal areas, salt marshes, wetlands, and beaches, including the Great Lakes. The CZMA encourages states to exercise their full authority over the coastal zone through the development of land and water use programs in cooperation with federal and local governments. States may apply for grants to help develop and implement management programs to achieve wise use of the land and water resources of the coastal zone. Under Section 307, federal agency activities that affect any land or water use or natural resource of a coastal zone must be consistent to the maximum extent practicable with the enforceable policies of the state's coastal management program.

The Safe Drinking Water Act (SDWA) of 1974 establishes a federal program to monitor and increase the safety of all commercially and publicly supplied drinking water. Congress amended the SDWA in 1986, mandating dramatic changes in nationwide safeguards for drinking water and establishing new federal enforcement responsibility on the part of USEPA. The 1986 amendments to the SDWA require USEPA to establish Maximum Contaminant Levels (MCLs), Maximum Contaminant Level Goals (MCLGs), and Best Available Technology (BAT) treatment techniques for organic, inorganic, radioactive, and microbial contaminants; and turbidity. MCLGs are maximum concentrations below which no negative human health effects are known to exist. The 1996 amendments set current federal MCLs, MCLGs, and BATs for organic, inorganic, microbiological, and radiological contaminants in public drinking water supplies.

The Wild and Scenic Rivers Act of 1968 provides for a wild and scenic river system by recognizing the remarkable values of specific rivers of the Nation. These selected rivers and their immediate environment are preserved in a free-flowing condition, without dams or other construction. The policy not only protects the water quality of the selected rivers but also provides for the enjoyment of present and future generations. Any river in a free-flowing condition is eligible for inclusion, and can be authorized as such by an Act of Congress, an act of state legislature, or by the Secretary of the Interior upon the recommendation of the governor of the state(s) through which the river flows.

EO 11988, *Floodplain Management* (24 May 1977), directs agencies to consider alternatives to avoid adverse effects and incompatible development in floodplains. An agency may locate a facility in a

floodplain if the head of the agency finds there is no practicable alternative. If it is found there is no practicable alternative, the agency must minimize potential harm to the floodplain, and circulate a notice explaining why the action is to be located in the floodplain prior to taking action. Finally, new construction in a floodplain must apply accepted floodproofing and flood protection to include elevating structures above the base flood level rather than filling in land.

EO 11990, *Protection of Wetlands* (24 May 1977), directs agencies to consider alternatives to avoid adverse effects and incompatible development in wetlands. Federal agencies are to avoid new construction in wetlands, unless the agency finds there is no practicable alternative to construction in the wetland, and the proposed construction incorporates all possible measures to limit harm to the wetland. Agencies should use economic and environmental data, agency mission statements, and any other pertinent information when deciding whether or not to build in wetlands. EO 11990 directs each agency to provide for early public review of plans for construction in wetlands.

EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance* (5 October 2009), directed the USEPA to issue guidance on Section 438 of the Energy Independence and Security Act. The Energy Independence and Security Act establishes into law new storm water design requirements for federal construction projects that disturb a footprint of greater than 5,000 square feet of land. Under these requirements, predevelopment site hydrology must be maintained or restored to the maximum extent technically feasible with respect to temperature, rate, volume, and duration of flow. Predevelopment hydrology would be calculated and site design would incorporate storm water retention and reuse technologies to the maximum extent technically feasible. Post-construction analyses will be conducted to evaluate the effectiveness of the as-built storm water reduction features. These regulations are applicable to DOD Unified Facilities Criteria. Additional guidance is provided in the USEPA's *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act*.

EO 13514 also requires federal agencies to improve water efficiency and management by reducing potable water consumption intensity by 2 percent annually, or by 26 percent, by Fiscal Year (FY) 2020, relative to a FY 2007 baseline. Furthermore, federal agencies must also reduce agency industrial, landscaping, and agricultural water consumption by 2 percent annually, or 20 percent, by FY 2020, relative to a FY 2010 baseline.

EO 13547, *Stewardship of the Ocean, Our Coasts, and the Great Lakes* (19 July 2010), establishes a national policy to ensure the protection, maintenance, and restoration of the health of ocean, coastal, and Great Lakes ecosystems and resources; enhance the sustainability of ocean and coastal economies; preserve our maritime heritage; support sustainable uses and access; provide for adaptive management to enhance our understanding of and capacity to respond to climate change and ocean acidification; and coordinate with our national security and foreign policy interests.

Biological Resources

The Endangered Species Act (ESA) of 1973 establishes a federal program to conserve, protect, and restore threatened and endangered plants and animals and their habitats. The ESA specifically charges federal agencies with the responsibility of using their authority to conserve threatened and endangered species. All federal agencies must ensure any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of an endangered or threatened species or result in the destruction of critical habitat for these species, unless the agency has been granted an exemption. The Secretary of the Interior, using the best available scientific data, determines which species are officially endangered or threatened, and the U.S. Fish and Wildlife Service (USFWS) maintains the list. A list of federal endangered species can be obtained from the Endangered Species Division, USFWS (703-358-2171).

States might also have their own lists of threatened and endangered species that can be obtained by calling the appropriate state Fish and Wildlife office. Some species also have laws specifically for their protection (e.g., Bald Eagle Protection Act).

The Migratory Bird Treaty Act (MBTA) of 1918, as amended, implements treaties and conventions between the United States, Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Unless otherwise permitted by regulations, the MBTA makes it unlawful to pursue, hunt, take, capture, or kill; attempt to take, capture, or kill; possess; offer to or sell, barter, purchase, or deliver; or cause to be shipped, exported, imported, transported, carried, or received any migratory bird, part, nest, egg, or product, manufactured or not. The MBTA also makes it unlawful to ship, transport, or carry from one state, territory, or district to another; or through a foreign country, any bird, part, nest, or egg that was captured, killed, taken, shipped, transported, or carried contrary to the laws from where it was obtained; and import from Canada any bird, part, nest, or egg obtained contrary to the laws of the province from which it was obtained. The U.S. Department of the Interior has authority to arrest, with or without a warrant, a person violating the MBTA.

The Bald and Golden Eagle Protection Act (BGEPA) prohibits the "take" of bald or golden eagles in the United States. The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb." For purposes of these guidelines, "disturb" means "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause: (1) injury to an eagle; (2) a decrease in its productivity by substantially interfering with normal breeding, feeding, or sheltering behavior; or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior" based on the best scientific information available.

The Sikes Act (16 United States Code [U.S.C.] §§670a-670o, 74 Stat. 1052), as amended, Public Law (P.L.) 86-797, approved 15 September 1960, provides for cooperation by the Departments of the Interior and Defense with state agencies in planning, development, and maintenance of fish and wildlife resources on military reservations throughout the United States. In November 1997, the Sikes Act was amended via the Sikes Act Improvement Amendment (P.L. 105-85, Division B, Title XXIX) to require the Secretary of Defense to carry out a program to provide for the conservation and rehabilitation of natural resources on military installations. To facilitate this program, the amendments require the Secretaries of the military departments to prepare and implement Integrated Natural Resources Management Plans (INRMPs) for each military installation in the United States unless the absence of significant natural resources on a particular installation makes preparation of a plan for the installation inappropriate. INRMPs must be reviewed by the USFWS and applicable states every 5 years. The National Defense Authorization Act of 2004 modified Section 4(a) (3) of the ESA to preclude the designation of critical habitat on DOD lands that are subject to an INRMP, if the Secretary of the Interior determines in writing that such a plan provides a benefit to the species for which critical habitat is proposed for designation.

EO 11514, *Protection and Enhancement of Environmental Quality* (5 March 1970), states that the President, with assistance from the Council on Environmental Quality (CEQ), will lead a national effort to provide leadership in protecting and enhancing the environment for the purpose of sustaining and enriching human life. Federal agencies are directed to meet national environmental goals through their policies, programs, and plans. Agencies should also continually monitor and evaluate their activities to protect and enhance the quality of the environment. Consistent with NEPA, agencies are directed to share information about existing or potential environmental problems with all interested parties, including the public, in order to obtain their views.

EO 13112, *Invasive Species* (3 February 1999), provides direction to use relevant programs and authorities to prevent introduction of invasive species, detect and respond rapidly to control populations of invasive species, monitor invasive species populations, provide restoration of native species and habitat

conditions in ecosystems that have been invaded, conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species, and promote public education on invasive species with means to address them. EO 13112 was created to minimize the economic, ecological, and human health impacts that invasive species cause.

EO 13186, *Conservation of Migratory Birds* (10 January 2001), creates a more comprehensive strategy for the conservation of migratory birds by the Federal Government. EO 13186 provides a specific framework for the Federal Government's compliance with its treaty obligations to Canada, Mexico, Russia, and Japan. EO 13186 provides broad guidelines on conservation responsibilities and requires the development of more detailed guidance in a Memorandum of Understanding (MOU). EO 13186 will be coordinated and implemented by the USFWS. The MOU will outline how federal agencies will promote conservation of migratory birds. EO 13186 requires the support of various conservation planning efforts already in progress; incorporation of bird conservation considerations into agency planning, including NEPA analyses; and reporting annually on the level of take of migratory birds.

Cultural Resources

The American Indian Religious Freedom Act of 1978 and Amendments of 1994 recognize that freedom of religion for all people is an inherent right, and traditional American Indian religions are an indispensable and irreplaceable part of Indian life. It also recognized the lack of federal policy on this issue and made it the policy of the United States to protect and preserve the inherent right of religious freedom for Native Americans. The 1994 Amendments provide clear legal protection for the religious use of peyote cactus as a religious sacrament. Federal agencies are responsible for evaluating their actions and policies to determine if changes should be made to protect and preserve the religious cultural rights and practices of Native Americans. These evaluations must be made in consultation with native traditional religious leaders.

The Archaeological Resource Protection Act (ARPA) of 1979 protects archaeological resources on public and American Indian lands. It provides felony-level penalties for the unauthorized excavation, removal, damage, alteration, or defacement of any archaeological resource, defined as material remains of past human life or activities which are at least 100 years old. Before archaeological resources are excavated or removed from public lands, the federal land manager must issue a permit detailing the time, scope, location, and specific purpose of the proposed work. ARPA also fosters the exchange of information about archaeological resources between governmental agencies, the professional archaeological community, and private individuals. ARPA is implemented by regulations found in 43 CFR Part 7.

The National Historic Preservation Act (NHPA) of 1966 sets forth national policy to identify and preserve properties of state, local, and national significance. The NHPA establishes the Advisory Council on Historic Preservation (ACHP), State Historic Preservation Officers (SHPOs), and the National Register of Historic Places (NRHP). The ACHP advises the President, Congress, and Federal agencies on historic preservation issues. Section 106 of the NHPA directs federal agencies to take into account effects of their undertakings (actions and authorizations) on properties included in or eligible for the NRHP. Section 110 sets inventory, nomination, protection, and preservation responsibilities for federally owned cultural properties. Section 106 of the act is implemented by regulations of the ACHP, 36 CFR Part 800. Agencies should coordinate studies and documents prepared under Section 106 with NEPA where appropriate. However, NEPA and NHPA are separate statutes and compliance with one does not constitute compliance with the other. For example, actions that qualify for a categorical exclusion under NEPA might still require Section 106 review under NHPA. It is the responsibility of the agency official to identify properties in the area of potential effects, and whether they are included or eligible for inclusion in the NRHP. Section 110 of the NHPA requires federal agencies to identify, evaluate, and nominate historic property under agency control to the NRHP.

The Native American Graves Protection and Repatriation Act of 1990 establishes rights of American Indian tribes to claim ownership of certain "cultural items," defined as Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony, held or controlled by federal agencies. Cultural items discovered on federal or tribal lands are, in order of primacy, the property of lineal descendants, if these can be determined, and then the tribe owning the land where the items were discovered or the tribe with the closest cultural affiliation with the items. Discoveries of cultural items on federal or tribal land must be reported to the appropriate American Indian tribe and the federal agency with jurisdiction over the land. If the discovery is made as a result of a land use, activity in the area must stop and the items must be protected pending the outcome of consultation with the affiliated tribe.

EO 11593, *Protection and Enhancement of the Cultural Environment* (13 May 1971), directs the Federal Government to provide leadership in the preservation, restoration, and maintenance of the historic and cultural environment. Federal agencies are required to locate and evaluate all federal sites under their jurisdiction or control that might qualify for listing on the NRHP. Agencies must allow the ACHP to comment on the alteration, demolition, sale, or transfer of property that is likely to meet the criteria for listing as determined by the Secretary of the Interior in consultation with the SHPO. Agencies must also initiate procedures to maintain federally owned sites listed on the NRHP.

EO 13007, *Indian Sacred Sites* (24 May 1996), provides that agencies managing federal lands, to the extent practicable, permitted by law, and not inconsistent with agency functions, shall accommodate American Indian religious practitioners' access to and ceremonial use of American Indian sacred sites, shall avoid adversely affecting the physical integrity of such sites, and shall maintain the confidentiality of such sites. Federal agencies are responsible for informing tribes of proposed actions that could restrict future access to or ceremonial use of, or adversely affect the physical integrity of, sacred sites.

EO 13175, *Consultation and Coordination with Indian Tribal Governments* (6 November 2000), was issued to provide for regular and meaningful consultation and collaboration with Native American tribal officials in the development of federal policies that have tribal implications, and to strengthen the United States government-to-government relationships with Native American tribes. EO 13175 recognizes the following fundamental principles: Native American tribes exercise inherent sovereignty over their lands and members, the United States government has a unique trust relationship with Native American tribes and deals with them on a government-to-government basis, and Native American tribes have the right to self-government and self-determination.

EO 13287, *Preserve America* (3 March 2003), orders federal agencies to take a leadership role in protection, enhancement, and contemporary use of historic properties owned by the Federal Government, and promote intergovernmental cooperation and partnerships for preservation and use of historic properties. EO 13287 established new accountability for agencies with respect to inventories and stewardship.

Socioeconomics and Environmental Justice

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (11 February 1994), directs federal agencies to make achieving environmental justice part of their mission. Agencies must identify and address the adverse human health or environmental effects that its activities have on minority and low-income populations, and develop agencywide environmental justice strategies. The strategy must list "programs, policies, planning and public participation processes, enforcement, and/or rulemakings related to human health or the environment that should be revised to promote enforcement of all health and environmental statutes in areas with minority populations and low-income populations, ensure greater public participation, improve research and data collection relating to the health of and environment of minority populations and low-income populations, and identify

differential patterns of consumption of natural resources among minority populations and low-income populations." A copy of the strategy and progress reports must be provided to the federal Working Group on Environmental Justice. Responsibility for compliance with EO 12898 is with each federal agency.

Hazardous Materials and Waste

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 authorizes USEPA to respond to spills and other releases of hazardous substances to the environment, and authorizes the National Oil and Hazardous Substances Pollution Contingency Plan. CERCLA also provides a federal "Superfund" to respond to emergencies immediately. Although the "Superfund" provides funds for cleanup of sites where potentially responsible parties cannot be identified, USEPA is authorized to recover funds through damages collected from responsible parties. This funding process places the economic burden for cleanup on polluters. Section 120(h) of CERCLA requires federal agencies to notify prospective buyers of contaminated federal properties about the type, quantity, and location of hazardous substances that would be present.

The Pollution Prevention Act of 1990 encourages manufacturers to avoid the generation of pollution by modifying equipment and processes; redesigning products; substituting raw materials; and making improvements in management techniques, training, and inventory control. Consistent with pollution prevention principles, EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management* (24 January 2007 [revoking EO 13148]), sets a goal for all federal agencies to promote environmental practices, including acquisition of biobased, environmentally preferable, energy-efficient, water-efficient, and recycled-content products; and use of paper of at least 30 percent post-consumer fiber content. In addition, EO 13423 sets a goal that requires federal agencies to ensure that they reduce the quantity of toxic and hazardous chemicals and materials acquired, used, or disposed of; increase diversion of solid waste, as appropriate; and maintain cost-effective waste prevention and recycling programs at their facilities. Additionally, in *Federal Register* Volume 58 Number 18 (29 January 1993), CEQ provides guidance to federal agencies on how to "incorporate pollution prevention principles, techniques, and mechanisms into their planning and decisionmaking processes and to evaluate and report those efforts, as appropriate, in documents pursuant to NEPA."

The Resource Conservation and Recovery Act (RCRA) of 1976 is an amendment to the Solid Waste Disposal Act. RCRA authorizes USEPA to provide for "cradle-to-grave" management of hazardous waste and sets a framework for the management of nonhazardous municipal solid waste. Under RCRA, hazardous waste is controlled from generation to disposal through tracking and permitting systems, and restrictions and controls on the placement of waste on or into the land. Under RCRA, a waste is defined as hazardous if it is ignitable, corrosive, reactive, toxic, or listed by USEPA as being hazardous. With the Hazardous and Solid Waste Amendments (HSWA) of 1984, Congress targeted stricter standards for waste disposal and encouraged pollution prevention by prohibiting the land disposal of particular wastes. The HSWA strengthens control of both hazardous and nonhazardous waste and emphasizes the prevention of pollution of groundwater.

The Superfund Amendments and Reauthorization Act (SARA) of 1986 mandates strong clean-up standards and authorizes USEPA to use a variety of incentives to encourage settlements. Title III of SARA authorizes the Emergency Planning and Community Right to Know Act, which requires facility operators with "hazardous substances" or "extremely hazardous substances" to prepare comprehensive emergency plans and to report accidental releases. If a federal agency acquires a contaminated site, it can be held liable for cleanup as the property owner/operator. A federal agency can also incur liability if it leases a property, as the courts have found lessees liable as "owners." However, if the agency exercises due diligence by conducting a Phase I Environmental Site Assessment, it can claim the "innocent purchaser" defense under CERCLA. According to Title 42 U.S.C. §9601(35), the current owner/operator

must show it undertook "all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice" before buying the property to use this defense.

The Toxic Substance Control Act (TSCA) of 1976 consists of four titles. Title I established requirements and authorities to identify and control toxic chemical hazards to human health and the environment. TSCA authorized USEPA to gather information on chemical risks, require companies to test chemicals for toxic effects, and regulate chemicals with unreasonable risk. TSCA also singled out polychlorinated biphenyls (PCBs) for regulation, and, as a result, PCBs are being phased out. PCBs are persistent when released into the environment and accumulate in the tissues of living organisms. They have been shown to cause adverse health effects on laboratory animals and could cause adverse health effects in humans. TSCA and its regulations govern the manufacture, processing, distribution, use, marking, storage, disposal, clean-up, and release reporting requirements for numerous chemicals like PCBs. TSCA Title II provides statutory framework for "Asbestos Hazard Emergency Response," which applies only to schools. TSCA Title III, "Indoor Radon Abatement," states indoor air in buildings of the United States should be as free of radon as the outside ambient air. Federal agencies are required to conduct studies on the extent of radon contamination in buildings they own. TSCA Title IV, "Lead Exposure Reduction," directs federal agencies to "conduct a comprehensive program to promote safe, effective, and affordable monitoring, detection, and abatement of lead-based paint and other lead exposure hazards." Further, any federal agency having jurisdiction over a property or facility must comply with all federal, state, interstate, and local requirements concerning lead-based paint.

Energy

The Energy Policy Act (EPAct) of 2005, P.L. 109-58, amended portions of the National Energy Conservation Policy Act and established energy management goals for federal facilities and fleets. Section 109 of EPAct directs that new federal buildings (commercial or residential) be designed 30 percent below American Society of Heating, Refrigerating, and Air-Conditioning Engineers standards or the International Energy Code. Section 109 also includes the application of sustainable design principles for new buildings and requires federal agencies to identify new buildings in their budget requests that meet or exceed the standards. Section 203 of EPAct requires that all federal agencies' renewable electricity consumption meet or exceed 3 percent from FY 2007 through FY 2009, with increases to at least 5 percent in FY 2010 through FY 2012 and 7.5 percent in FY 2013 and thereafter. Section 203 also establishes a double credit bonus for federal agencies if renewable electricity is produced onsite at a federal facility, on federal lands, or on Native American lands. Section 204 of EPAct establishes a photovoltaic energy commercialization program for federal buildings.

EO 13514, *Federal Leadership In Environmental, Energy, And Economic Performance* (5 October 2009), directs federal agencies to improve water use efficiency and management; implement high performance sustainable federal building design, construction, operation and management; and advance regional and local integrated planning by identifying and analyzing impacts from energy usage and alternative energy sources. EO 13514 also directs federal agencies to prepare and implement a Strategic Sustainability Performance Plan to manage its GHG emissions, water use, pollution prevention, regional development and transportation planning, sustainable building design and promote sustainability in its acquisition of goods and services. Section 2(g) requires new construction, major renovation, or repair and alteration of buildings to comply with the Guiding Principles for federal Leadership in High Performance and Sustainable Buildings. The CEQ regulations at 40 CFR 1502.16(e) directs agencies to consider the energy requirements and conservation potential of various alternatives and mitigation measures.

Section 503(b) of EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, instructs federal agencies to conduct their environmental, transportation, and energy-related activities under the law in support of their respective missions in an environmentally, economically, and

fiscally sound, integrated, continuously improving, efficient, and sustainable manner. EO 13423 sets goals in energy efficiency, acquisition, renewable energy, toxic chemical reduction, recycling, sustainable buildings, electronics stewardship, fleets, and water conservation. Sustainable design measures such as the use of "green" technology (e.g., photovoltaic panels, solar collection, heat recovery systems, wind turbines, green roofs, and habitat-oriented storm water management) would be incorporated where practicable.

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APPENDIX B

INTERAGENCY AND INTERGOVERNMENTAL COORDINATION FOR ENVIRONMENTAL PLANNING, NATIVE AMERICAN TRIBAL CONSULTATION, AND PUBLIC INVOLVEMENT CORRESPONDENCE

AGENCY CONTACT LIST

Agency	Address
U. S. Fish and Wildlife Service Georgia Ecological Services Attn: Gail Martinez	4980 Wildlife Drive, NE Townsend, Georgia 31331
Georgia DNR Wildlife Resources Division Fitzgerald Regional Office Attn: Mr. Greg Nelms	108 Darling Ave. Waycross, GA 31501
Georgia Environmental Protection Division	2 Martin Luther King Jr. Drive Suite 1152, East Tower Atlanta, GA 30334
Georgia Dept. of Community Affairs	60 Executive Park South, NE Atlanta, GA 30329
Georgia Wildlife Resources Division	2070 U.S. Hwy. 278, S.E. Social Circle, GA 30025
Georgia Historic Protection Division Jennifer Dixon	254 Washington Street, SW Ground Level Atlanta, GA 30334
Georgia Department of Transportation Engineering Division	One Georgia Center 600 West Peachtree NW – 25th Floor Atlanta, Georgia 30308
South Georgia Regional Planning Council	327 West Savannah Ave Valdosta, GA 31601
Lowndes County Commission Michael Fletcher County Engineer	327 N. Ashley St - 2nd Floor Valdosta, GA 31601
Lanier County Commission	Courthouse, 100 Main St. Lakeland, GA 31635
Lanier County Public Library	124 South Valdosta Road Lakeland, GA 31635
Echols County Commission	P.O. Box 190 Statenville, GA 31648
South Georgia Regional Library	300 Woodrow Wilson Dr Valdosta, GA 31602

IICEP LETTER: on following page

DEPARTMENT OF THE AIR FORCE
23D CIVIL ENGINEER SQUADRON (ACC)
MOODY AIR FORCE BASE GEORGIA

MEMORANDUM FOR FEDERAL, STATE, AND LOCAL PUBLIC AGENCIES

FROM: 23 CES/CD
3485 Georgia Street
Moody AFB, GA 31699-1707

SUBJECT: Proposed Environmental Assessment at Moody AFB, GA

1. The United States Air Force is in the process of preparing an Environmental Assessment (EA) at Moody Air Force Base (AFB), Georgia (GA) to assess the potential environmental consequences associated with implementation of the approved 2014-2017 Moody Air Force Base (AFB) Integrated Natural Resources Management Plan (INRMP). Moody is located in south central Georgia, north of the city of Valdosta in Lowndes County (Attachment 1). The Sikes Act requires military installations to develop and implement a cooperative INRMP in concert with the U.S. Fish and Wildlife Service and state wildlife management agencies (e.g. Georgia Department of Natural Resources (DNR)). The Moody AFB INRMP was prepared to meet natural resources regulatory requirements while ensuring no net loss in the capability of military installation lands to support the military mission of the installation. At this time, only the proposed action and the no action alternative are being considered.

2. The Moody AFB INRMP was prepared to assist the Moody AFB installation commander with the conservation and rehabilitation of natural resources consistent with the military mission of Moody AFB for the next 4 years and has been developed to meet the statutory provision of the Sikes Act (16 United States [U.S.] Code [USC] 670a (b) (1)(I)) that there shall be "no net loss in the capability of military installation lands to support the military mission of the installation." The INRMP was approved on 26 Sept 2013. A copy of the approved Moody AFB INRMP can be provided upon request to assist in the identification of specific environmental concerns to be addressed in this accompanying environmental assessment. The INRMP is based on an interdisciplinary approach to ecosystem management and addresses wildlife and forest management goals and objectives, as well as the conservation and enhancement of wetlands and protected species in the context of the military mission. Management plans addressed in the INRMP are focused on the unimproved areas of the installation and do not include the management of improved grounds, including grass and landscape maintenance, which are addressed in other installation plans and documents. The INRMP does not assess potential environmental consequences of each action; therefore an environmental assessment will be completed to evaluate any potential environmental impacts of the actions and will include Endangered Species Act and National Historic Preservation Act consultation requirements.

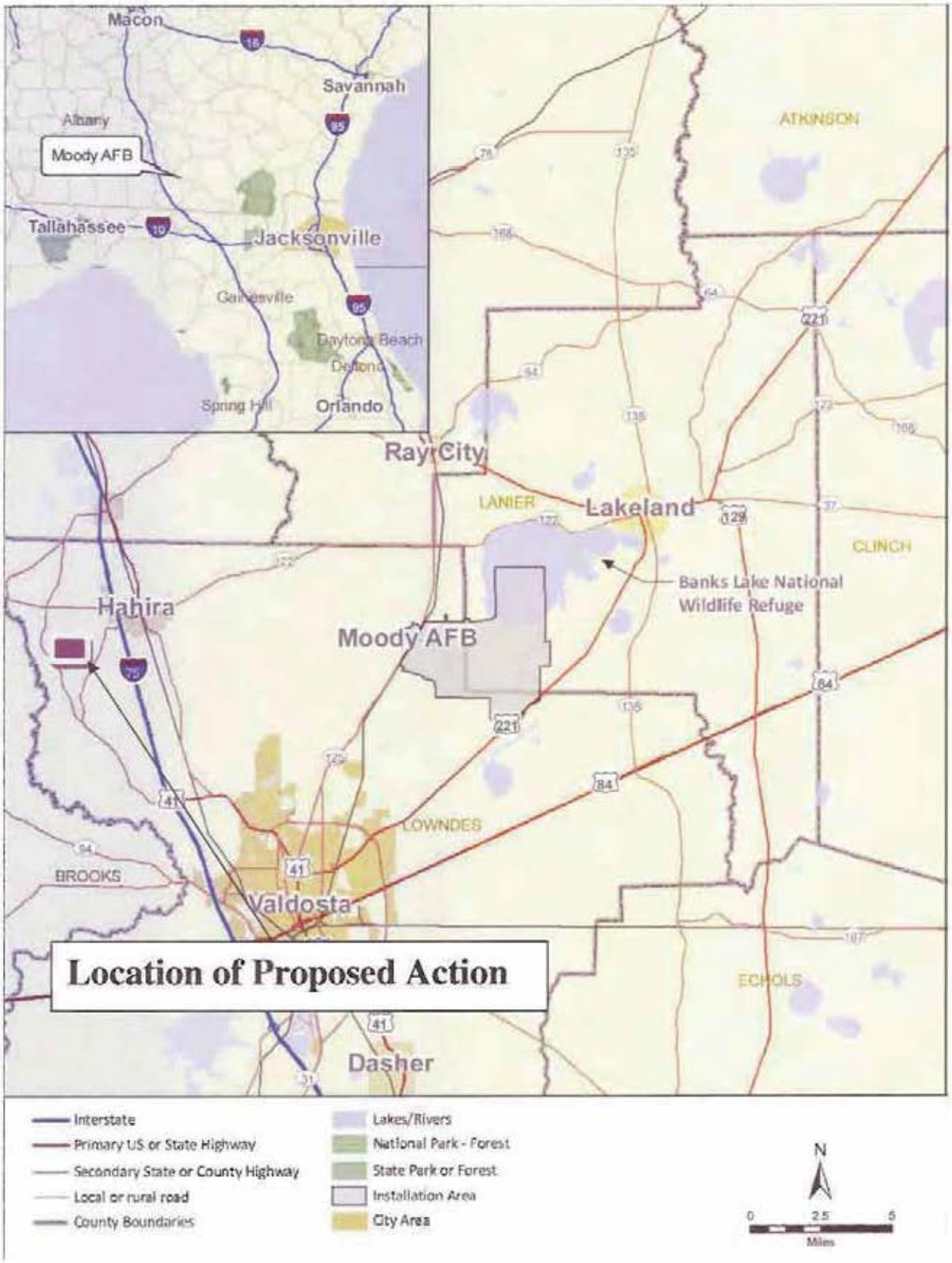
3. The EA for the proposed action will be prepared in compliance with the National Environmental Policy Act of 1969, 42 United States Code (USC), the Council on Environmental Quality NEPA Regulations, 40 Code of Federal Regulations (CFR), and the Air Force's

Environmental Impact Analysis Process, 32 CFR 989. As part of this EA, we request your assistance in identifying potential areas of environmental impact to be addressed.

4. If you have any specific items of interest about the proposal, we would like to hear from you within 30-days of receipt of this letter. Please contact the EA Project Manager, Mr. Hank Santicola at 23d Civil Engineer Squadron, 3485 Georgia Street, Moody AFB GA 31699, or via e-mail at henry.santicola.2@us.af.mil, or by phone at (229) 257-2396 with any questions or concerns you or your staff may have.

JOHN L. EUNICE, III
Deputy Base Civil Engineer

Attachment:
Location of Moody AFB, Georgia



Attachment 1

United States Department of the Interior

Fish and Wildlife Service
105 West Park Drive, Suite D
Athens, Georgia 30606
Phone: (706) 613-9493
Fax: (706) 613-6059

West Georgia Sub-Office
Post Office Box 52560
Fort Benning, Georgia 31995-2560
Phone: (706) 544-6428
Fax: (706) 544-6419

Coastal Sub-Office
4980 Wildlife Drive
Townsend, Georgia 31331
Phone: (912) 832-8739
Fax: (912) 832-8744

August 28, 2014

Mr. John L Eunice, III
Department of the Air Force
23rd Civil Engineer Squadron
3485 Georgia Street
Moody Air Force Base, Georgia 31699
Attention: Mr. Hank Santicola

Re: USFWS 2014-0967

Dear Mr. Santicola:

Thank you for the opportunity to provide comments on the proposed Environmental Assessment (EA) at Moody Air Force Base (AFB) in Lowndes County, Georgia to assess the potential environmental impacts associated with the implementation of the approved 2014-2017 Moody AFB Integrated Natural Resources Management Plan (INRMP).
We submit the following comments in accordance with provisions of the Endangered Species Act of 1973, as amended; (16 U.S.C. 1531 *et seq.*), the Bald and Golden Eagle Protection Act of 1940 (BGEPA), and the Migratory Bird Treaty Act of 1918 (MBTA), to further the conservation of fish and wildlife resources and their habitat, including federally listed threatened and endangered species.

During our review of the INRMP, two federally listed species were identified as potentially affected by proposed actions covered under this plan. These species are: wood stork *(mycteria americana)* and Eastern indigo snake (*Drymarchon couperi*). Additionally, the bald eagle *(haliaeetus leucocephalus)* is protected under the BGEPA and MBTA. At this time, the Service does not have any specific items of interest about the proposal that has not already been addressed in previous comments during the planning phase of the INRMP.

We appreciate the opportunity provide comments on the EA and look forward to the continued success of the partnership with Moody AFB. If you have any additional questions, please write or call staff biologist Gail Martinez at 912-832-8739 extension 7.

Sincerely,

Strant Colwell

Strant Colwell
Coastal Georgia Supervisor

DEPARTMENT OF THE AIR FORCE
23D CIVIL ENGINEER SQUADRON (ACC)
MOODY AIR FORCE BASE GEORGIA

FEB 13 2015

MEMORANDUM FOR U.S. FISH AND WILDLIFE SERVICE
Ecological Services Field Office
Attn: Ms. Gail Martinez
4980 Wildlife Drive NE
Townsend GA 31331

FROM: 23 CES/CC

SUBJECT: Endangered Species Act (ESA) Consultation for Implementation of Integrated Natural Resources Management Plan (INRMP), Moody AFB GA

1. References:

a. Moody AFB INRMP for Fiscal Years 2014-2017, signed 26 September 2013

b. Moody AFB INRMP Annual Review for FY15, signed 27 October 2014

2. The Air Force has determined that the proposed implementation of the INRMP at Moody AFB, Lowndes County, GA, may affect, but will not adversely affect, any Federally listed threatened or endangered species. We request your concurrence with that determination. Maps of the area are provided (Attachments 1 and 2).

3. In accordance with the Sikes Act (16 USC 670, as amended) and Air Force Instruction 32-7064, *Integrated Natural Resources Management Plan*, Moody AFB proposes to implement the natural resources management activities outlined in the INRMP and subsequent annual reviews that were developed in cooperation with your office and the Wildlife Resources Division of the Georgia Department of Natural Resources (DNR). The purpose of the proposed action is to direct and support the installation mission through the conservation of natural resources at Moody AFB, including the management of federally listed species. Detailed information on the proposed natural resources management activities planned for implementation through FY2018 is available in the Moody AFB INRMP, which has been previously provided to your office. A table listing the individual actions proposed for implementation in the FY15 annual review is attached (Attachment 3), along with maps showing the location of these activities (Attachment 4). Generally, the actions proposed for implementation under the INRMP that have the potential to impact listed and/or candidate species include:

a. Monitoring of gopher tortoise populations.

b. Surveys for rare, threatened, and endangered species.

c. Prescribed burning of approximately 800 acres annually.

d. Aquatic weed control of approximately 100 acres annually.

e. Invasive species control, 55 acres total (2015: 40 acres; 2016: 5 acres; 2017: 5 acres; 2018: 5 acres)

f. Hardwood midstory control through chemical herbicide applications, 250 acres total (2015: 235 acres; 2016: 15 acres)

g. Hardwood midstory control through mechanical means, 105 acres total (2015: 105 acres)

h. Timber harvest, selective thinning, 123 acres total (2015: 89 acres; 2016: 34 acres)

i. Timber harvest, clearcut/regeneration, 56 acres (2015: 16 acres; 2016: 20 acres; 2018: 20 acres)

j. Timber harvest, seed tree regeneration, 104 acres (2015: 42 acres; 2017: 46 acres; 2018: 16 acres)

k. Site preparation and planting of longleaf pine, 12 acres total (2016)

4. Initial surveys for rare, threatened, and endangered (RTE) species were conducted in the Bemiss Field area in 1993-1994 by biologists with The Nature Conservancy. Additional general surveys for RTE species were conducted in 1995 by biologists from GeoMarine and in 1996 by biologists with the U.S. Army Corps of Engineers. These surveys have been supplemented by periodic surveys by installation staff and contracted species-specific surveys for gopher tortoises (*Gopherus polyphemus)*, eastern indigo snakes (*Drymarchon couperi),* frosted flatwoods salamander (*Ambystoma cingulatum),* and striped newts (*Notophthalmus peristriatus*) as reported in the Moody AFB INRMP. Currently, there are only two federally listed species (eastern indigo snake and wood stork) and one candidate species (gopher tortoise) known to occur on Moody AFB.

a. EASTERN INDIGO SNAKE: Three sightings of eastern indigo snakes were recorded in 1991, and a juvenile and adult eastern indigo snake were captured adjacent to Bemiss Field in 1996 (see map at Attachment 5). Additionally, three eastern indigo snakes confiscated by the Georgia Department of Natural Resources (GDNR) were released on Grand Bay Range in 1993 and 1995. However, there have been no additional confirmed sightings of eastern indigo snakes on Moody AFB since 1996, despite subsequent species-specific surveys for eastern indigo snakes in 2002 and exensive gopher tortoise burrow monitoring activities. While there is a potential for individual snakes to continue to exist on the installation, Moody AFB lacks the important habitat characteristics (i.e. large contiguous tracts of longleaf pine/sandhills adjacent to an early successional habitat mosaic) necessary to support a viable, self-sustaining population. The proposed action includes the improvement and enhancement of potential habitat for the eastern indigo snake, to include selective timber thins, establishment of native pine forests, removal of invasive species, prescribed burning, and promotion of early successional habitat adjacent to potential wintering and foraging habitat. Additionally, Moody AFB will continue to implement the Reasonable and Prudent Measures, Terms and Conditions, and Conservation

Measures from the 1996 Incidental Take Statement for the Bemiss Field Drop Zone to proactively manage for eastern indigo snakes and gopher tortoises. While the proposed actions would introduce short-term minor negative effects from the use of heavy equipment (i.e. increases in noise, soil compaction, soil disturbance), the long-term effect of the proposal would improve indigo snake habitat and would be beneficial for the species.

b. WOOD STORKS: Wood storks can occasionally be seen within the wetlands on Moody AFB when water and habitat conditions are conducive to productive foraging. A map showing the documented sightings of wood storks on Moody AFB over the last fifteen years is attached (Attachment 5). The closest wood stork rookery to the installation is located near Hahira, Georgia, approximately 12 miles from the installation (Attachment 6). There are no direct proposed actions identified in the INRMP to enhance or improve wood stork habitat on the installation, although visual surveys to identify wood stork foraging areas will continue as identified in the INRMP. The proposed implementation of the activities in the INRMP would have no significant positive or negative impacts on wood storks.

c. GOPHER TORTOISES: There are six identified gopher tortoise colonies located on Moody AFB (Attachment 5). Biological studies of gopher tortoises on Moody AFB have been conducted since 1998. The proposed action includes the continuation of the gopher tortoise demography and disease evaluation studies, to include annual surveys of known and potential gopher tortoise habitat to update gopher tortoise burrow distribution maps. The proposed action includes the improvement and enhancement of potential habitat for the gopher tortoise, to include selective timber thins, establishment of native pine forests, midstory hardwood removal within suitable habitat, removal of invasive species, prescribed burning, and promotion of early successional habitat to increase foraging habitat. While the proposed actions would introduce short-term minor negative effects from the use of heavy equipment (i.e. increases in noise, soil compaction, soil disturbance), the long-term effect of the proposal would improve gopher tortoise habitat and would be beneficial for the species.

d. FROSTED FLATWOODS SALAMANDERS AND STRIPED NEWTS: As noted in the Moody AFB INRMP, surveys for striped newts were initially conducted in 1995 and additional surveys for both frosted flatwoods salamanders and striped newts were conducted from 2002 through 2005 in isolated and semi-isolated wetlands on Moody AFB in the best available habitat. Neither frosted flatwoods salamanders or striped newts were captured during these surveys at Moody AFB, and both reports indicate the habitat on Moody AFB is marginal at best for these species. The proposed action includes the management and enhancement of potential frosted flatwoods salamander and striped newt habitat on Moody AFB through periodic prescribed burning, removal of invasive species, and protection of the areas from ground disturbance. The overall effect of this proposal would be beneficial for biotic use of these isolated and semi-isolated wetlands by amphibians, including any frosted flatwoods salamanders or striped newts that might emigrate to the area.

e. BALD EAGLES: Historically, there was a single bald eagle nest located within Moody AFB-owned property at the Grassy Pond Recreational Annex. Eagles successfully fledged from this nest from 1999-2006. However, two events disrupted use of the nest: an injured female bald eagle (presumed to be the female from the Grassy Pond nest) was recovered by the Georgia

DNR on private lands near Grassy Pond and transferred to Auburn University for rehabilitation in 2006, and, around the same time period, the forested area around the nest was damaged during a tropical storm event, removing the majority of the forest canopy around the nest tree. The nest was abandoned until 2010, when nesting was reinitiated and two young eagles were fledged the following spring. This nest has not been used since 2011. A new nest was discovered in 2013 on private land immediately adjacent to Grassy Pond, and one eagle was fledged from this nest in 2014. This nest is currently active, and Moody AFB environmental personnel monitor reproductive activity and nest success at this location. While an active eagle nest is not currently present on Moody AFB-owned property, the facility is used for foraging by the adjacent nesting eagles. The proposed action includes the continued management of the Grassy Pond Lake for eagles, including the control of invasive aquatic species and periodic restocking of forage fish. The overall effect of this proposal is beneficial to the continuation of bald eagle use of Grassy Pond.

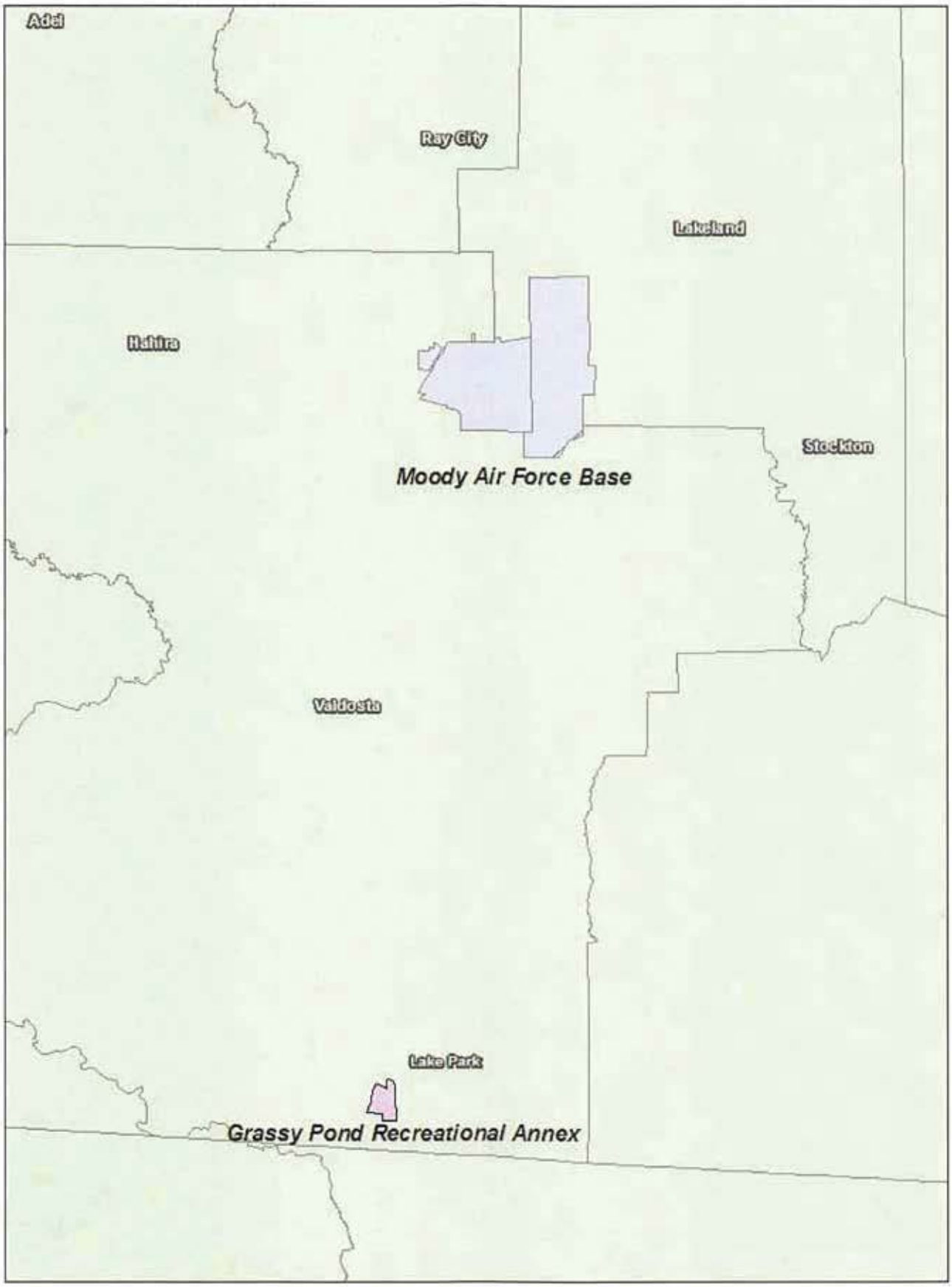
5. Based upon this analysis, our staff believes the proposed action may affect, but will not adversely affect, any listed or candidate species. Therefore, Moody AFB requests your written concurrence with our determination and the conclusion of this informal consultation under Section 7 of the Endangered Species Act.

6. If you have any questions or need any further information, please contact Mr. Gregory Lee at 229-257-5881 or by e-mail at gregory.lee.5@us.af.mil.

THANG D. NGUYEN, Maj, USAF
Commander

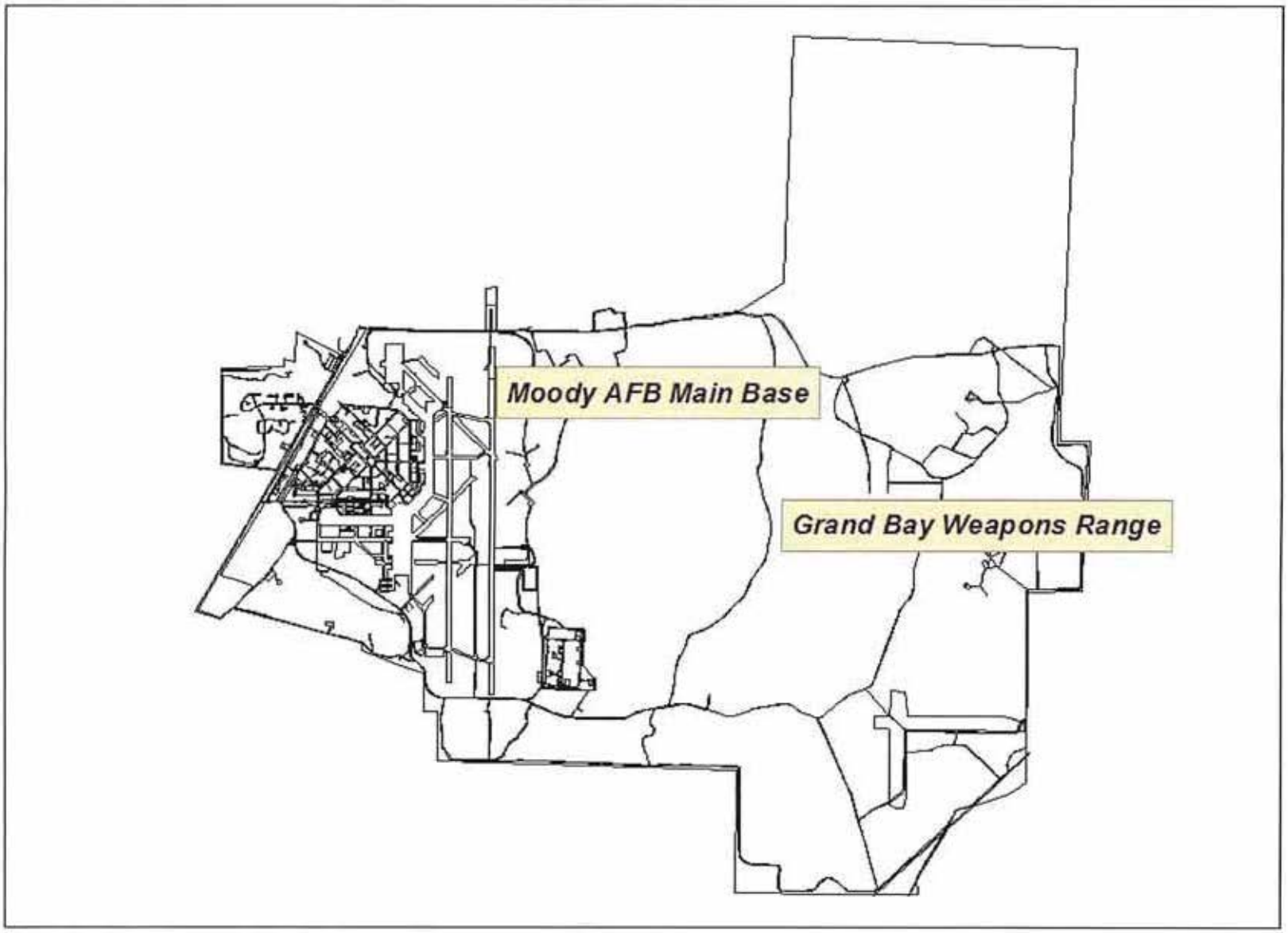
Attachments:
1. General Location of Moody AFB, GA
2. Moody AFB Installation Map
3. Proposed Natural Resources Projects Identified for Implementation (FY 2015-2018)
4. Location of Proposed Natural Resources Projects (FY2015-2018)
5. Location of Listed and Candidate Species on Moody AFB, GA
6. Proximity of Wood Stork Rookeries to Moody AFB, GA

General Location of Moody AFB, Georgia



Attachment 1

Installation Map
Moody AFB, GA



Attachment 2

Table 2-1. Proposed Natural Resources Projects Identified for Implementation (FY 2015–2018)

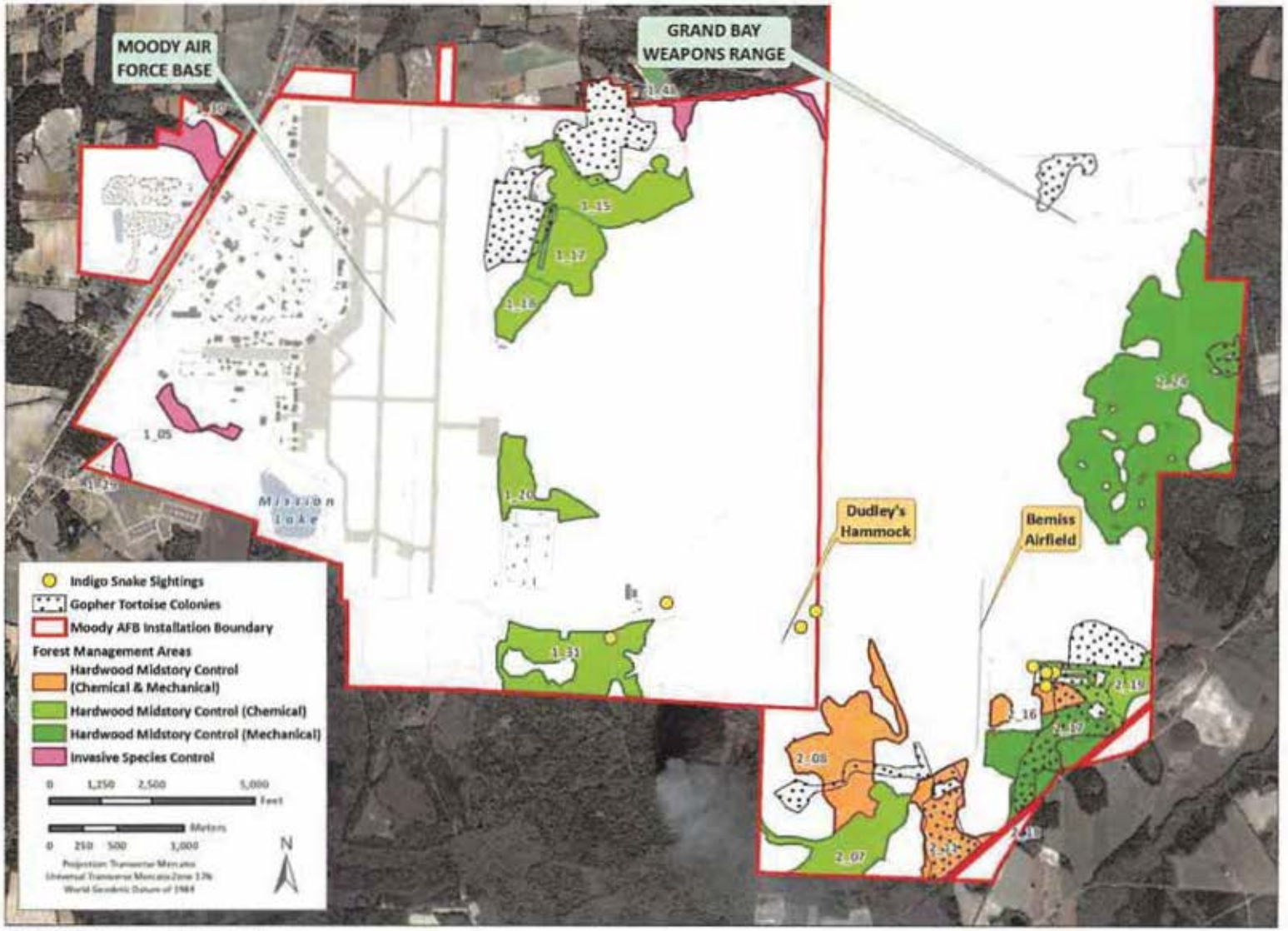
Project #	FY	Description/Status	INRMP Goals*		Legal Policy**	Priority for Implementation
			PG	SG		
1	Recurring Projects (FY15-FY18)	Gopher Tortoise Demographic Study	I	2	ESA, FWCA†	1
2		Gopher Tortoise Disease Study	I	2		
3		Gopher Tortoise Movement Study	I	2		
4		Bald Eagle Nest Monitoring	I	2	BGEPA, MBTA, EO 13186, FWCA†	11
5		Natural Resources Program Outreach	I VI	5 3	†	12
6		Surveys for Newly Listed Species	I	1	ESA, FWCA†	13
7		Records Management and GIS Data Entry	I II III IV V VI	1, 4 1, 2 3 1 1 1	†	7
8		Prescribed Burning	IV V VI	3 2, 4 2	MBTA, EO 13186, FWCA†	2
9		Continue to Implement Wetlands Monitoring Plan	II VI	1, 2, 3 2	CWA, MBTA, EO 13186, EO 11990†	8
10		Maintain License Agreement with GDNR for Grand Bay WMA	III	1	†	3
11		Purchase and Maintain Hunting Stands	III	1	†	14
12		Wildlife Population Surveys	I III	1, 2, 4, 1	FWCA, MBTA, EO 13186†	16
13		Aquatic Weed Control	III	2	FNWA, CWA, EO 13112 †	16
14		Urban Forest Management	IV V	1 1, 2	†	9
15		Remove Hazard Trees in Urban Settings	IV	1	†	10
16		Urban Forest Data Maintenance	IV	1	†	15
17		Airfield Burning:	IV V	3 4	AFI 91-202, MBTA, EO 13186†	4
18		Monitoring of Dudley's Hammock	I VI	3, 4 1, 2	†	17
19		Exotic Invasive Species Control	III V	2 2	FNWA, CWA, EO 13112 †	6

Attach 3

Project #	FY	Description/Status	INRMP Goals*		Legal Policy**	Priority for Implementation
			PG	SG		
20	FY15	Seed Tree Regeneration Harvest, Stand 2-08 (42+ ac)	V	1 – 5	†	1
21		Hardwood Midstory Control (Chemical), Stand 2-08 (68+ ac) FY14: Partially Completed (Sprayed 47 acres as part of larger contract); Remaining 21 acres scheduled to be completed in FY15	V	1 – 5	†	3
22		Hardwood Midstory Control (Mechanical), Stand 2-11 (47+ ac) FY14: Partially Completed (19 ac completed as part of larger project); Remaining 27 ac scheduled to be completed in FY15	V	1 – 5	†	2
23		Timber Thinning Sale, Stands 2-19 and east 2-37 (35+ ac)	V	1 – 5	†	4
24		Clearcut, Site Preparation, and Planting of Longleaf Pine, Stands 2-10 & east 2-07 (16+ ac)	V	1 – 5	†	5
25		Hardwood Midstory Control (Chemical), 2-07 (12+ ac), 1-31 (38+ ac), and eastern portion of 2-16 (13+ ac)	V	1 – 5	†	6
26		Hardwood Midstory Control (Mechanical), 2-16 (12 ac), 2-17 (30 ac), 2-24 (21 ac), 2-08 (9 ac), and 2-18 (6 ac)	V	1-5	†	7
27		Hardwood Midstory Control (Chemical), 2-19 (13 ac), 1-20 (9 ac), 1-15 (30 ac), 1-17 (20 ac), and 1-18 (11 ac)	V	1-5	†	7
28		Invasive Species Survey and Control -- Survey of invasive species on 380 ac and mechanical control (mastication) of Chinese privet in selected areas in stands 1-30, 1-05, 1-29, and 1-48 (40 ac)	V	1 – 5	†	1
29		Thinning Timber Sale, 2-08 (24+ ac), and 2-24 (30+ ac)	V	1 – 5	†	1
30	FY16	Clearcut, Site Preparation, and Planting of Slash Pine, Stands 2-08 and 2-07 (20+ ac)	V	1 – 5	†	2
31		Timber Thinning, Stands 1-18 (26+- ac) and 1-16 (39+ ac) FY14: Partially completed (Stand 1-18 thinned; 4 ac of 1-16 thinned); Remaining 34 ac of stand 1-16 scheduled for FY16 FY15: Not Scheduled for Action FY16: Scheduled remaining 34 ac of stand 1-16	V	1 – 5	†	1
32		Hardwood Midstory Control (Chemical), Stand 2-11 (47+ ac) FY14: Partially completed (15 ac sprayed); Adjusted remaining acreage to 15 ac scheduled to be sprayed in FY16 FY15: Not Scheduled for Action FY16: Scheduled remaining 15 acres for spraying	V	1 – 5	†	3
33		Site preparation and planting of Longleaf Pine, Stand 1-23 (12 ac) NOTE: Project can only be accomplished if environmental restoration of MMRP site is completed	V	1-5	†	3
34	FY17	Seed Tree Regeneration Harvest, Stand 1-15 (46+ ac)	V	1 – 5	†	1
35	FY18	Clearcut, mechanical site preparation, and planting of Longleaf Pine, East side of Stand 2-24 (20 ac)	V	1 – 5	†	1
36		Seed Tree Regeneration Cut, Stand 2-07 (16 ac)	V	1 – 5	†	1

Source: Moody AFB 2014. Notes: *Refer to Chapter 8 for details on INRMP goals and objectives. PG = Principal Goal; SG = Supporting Goal.

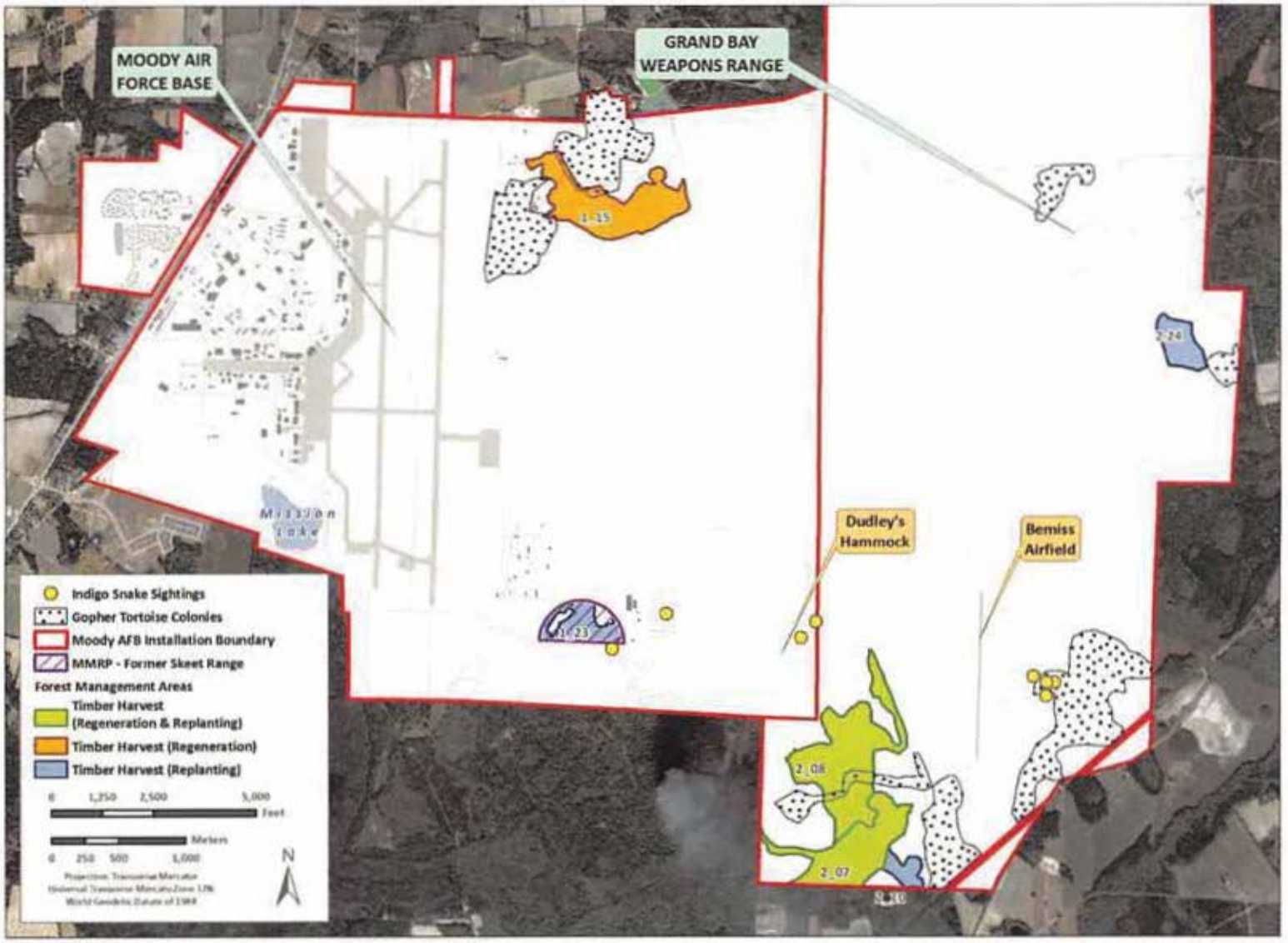
†AFI 32-7064, DOD Directive 4700.4, and SAIA provide legal policy and guidance for all proposed natural resource projects. BGEPA = Bald and Golden Eagle Protection Act; CWA = Clean Water Act; FNWA = Federal Noxious Weed Act; FWCA = Fish and Wildlife Coordination Act; WMA=Wildlife Management Area.



Source of Forest Management Areas: Moody AFB 2014

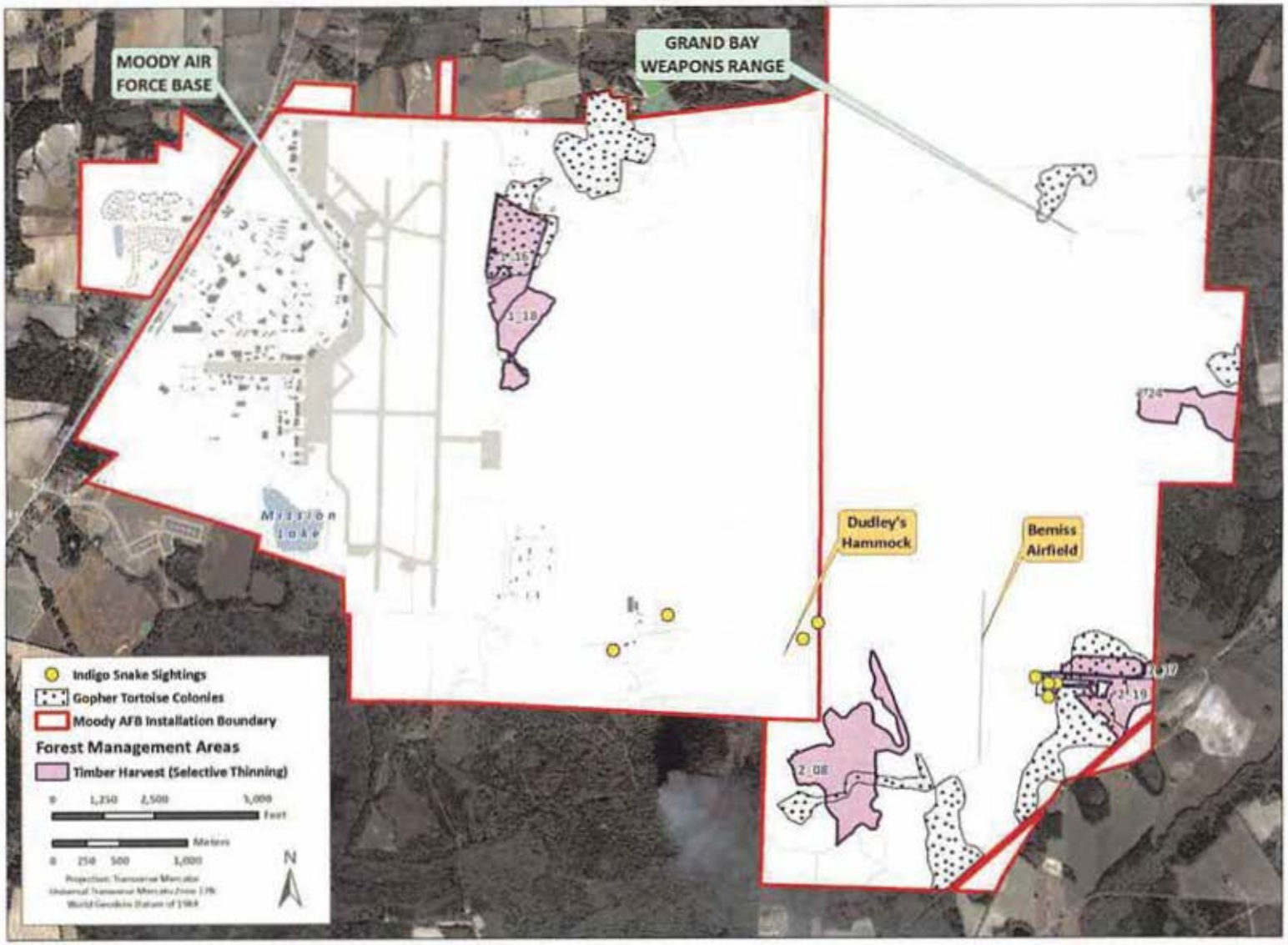
Figure 4-1. Mid-story Hardwood and Invasive Species Control on Moody AFB

Attach 4



Source of Forest Management Areas: Moody AFB 2014

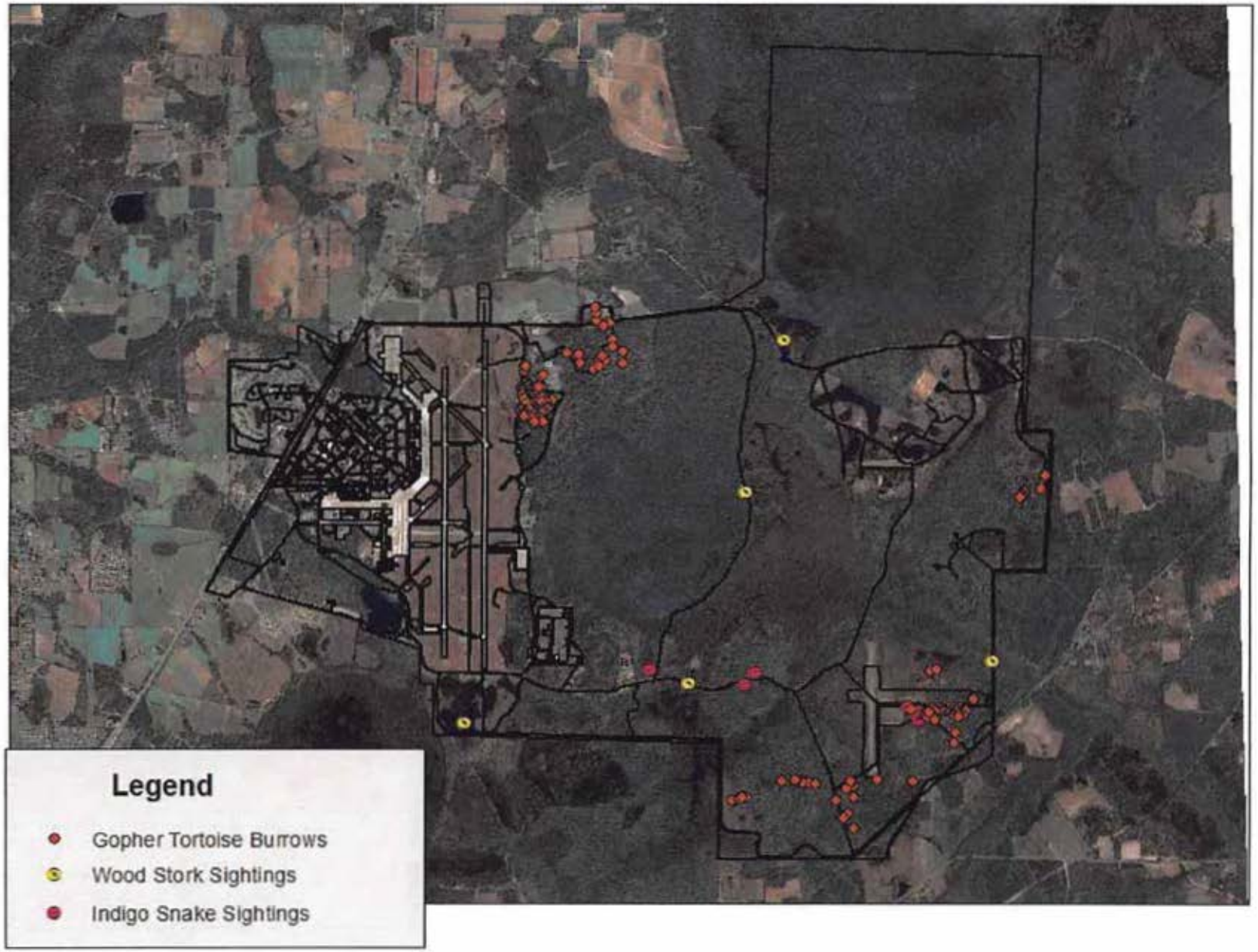
Figure 4-2. Timber Harvest with Regeneration and Replanting on Moody AFB



Source of Forest Management Areas: Moody AFB 2014

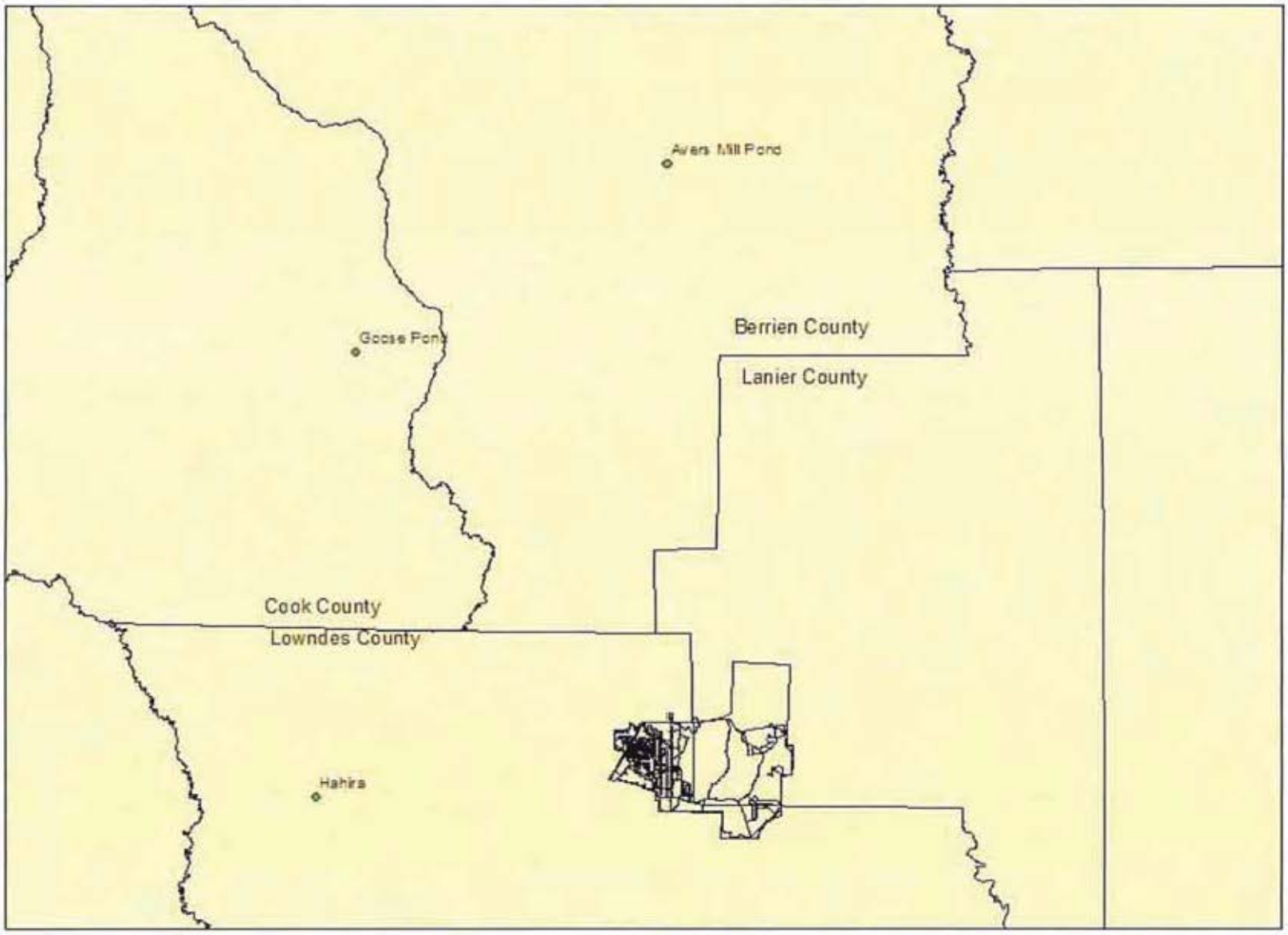
Figure 4-3. Timber Harvest with Selective Thinning on Moody AFB

Location of Listed and Candidate Species
Moody AFB, Georgia



Attachment 5

Wood Stork Rookeries in Proximity to Moody AFB, GA



(Data Source: GDNR Nongame Office, December 2013)

Attachment 6

United States Department of the Interior

Fish and Wildlife Service
105 West Park Drive, Suite D
Athens, Georgia 30606
Phone: (706) 613-9493
Fax: (706) 613-6059

West Georgia Sub-Office
Post Office Box 52560
Fort Benning, Georgia 31995-2560
Phone: (706) 544-6428
Fax: (706) 544-6419

Coastal Sub-Office
4980 Wildlife Drive
Townsend, Georgia 31331
Phone: (912) 832-8739
Fax: (912) 832-8744

March 13, 2015

Lieutenant Colonel Patrick M. Albritton
Department of the Air Force
23rd Civil Engineer Squadron
3485 Georgia Street
Moody Air Force Base, Georgia 31699
Attention: Mr. Gregory Lee

Re: USFWS 2015-0386

Dear Colonel Albritton:

We received your letter initiating informal Section 7 consultation for the proposed implementation of the Integrated Natural Resources Management Plan (INRMP) at Moody Air Force Base (MAFB) in Lowndes County, Georgia. We submit the following comments in accordance with provisions of the Endangered Species Act of 1973, as amended; (16 U.S.C. 1531 et seq.) (ESA) and the Bald and Golden Eagle Protection Act of (BGEPA), the Migratory Bird Treaty Act (MBTA), to further the conservation of fish and wildlife resources and their habitat, including federally listed threatened and endangered species.

The natural resource activities outlined in the INRMP were developed in coordination with our office and the Wildlife Resources Division of the Georgia Department of Natural Resources. The purpose of this plan is to direct and support the installation mission through the conservation of natural resources at Moody AFB, including the management of federally listed species. The actions proposed for implementation under the INRMP that have the potential to impact listed and/or candidate species include: the monitoring of gopher tortoise populations; surveys for rare, threatened and endangered species; prescribed burning of approximately 800 acres annually; aquatic weed control of

approximately 100 acres annually; invasive species control on a total of 55 acres; hardwood midstory control through herbicide applications on a total of 105 acres; timber harvest of a total of 283 acres and the planting of 12 acres of longleaf pine.

The following species were identified as having the potential for impact with the implementation of the INRMP: gopher tortoise (Gopherus polyphemus), Eastern indigo snake (Drymarchon couperi), wood stork (mycteria americana), frosted flatwoods salamander *(Ambystoma cingulatum),* striped Newt *(Notophthalmus perstriatus).* The bald eagle (haliaeetus leucocephalus) was also identified due to its protection under the BGEPA and MBTA.

According to the results of most recent surveys at Moody AFB, there are only two federally listed species (Eastern indigo snake and wood stork) and one candidate species (gopher tortoise) known to occur on Moody AFB. The overall effect of the proposed activities outlined in the INRMP would be beneficial for the species. The INRMP also provides for the management and enhancement of potential frosted flatwoods salamander and striped newt habitat. The proposed action includes the continued management for eagles since the facility is used for foraging by a nesting pair of bald eagles on a nearby property.

Based on the information provided in your letter, we concur that the Proposed Action *may affect but is not likely to adversely affect* federally protected species. Based on the known distribution of the federally protected species in and around the proposed action area and the scope of the proposed action, we do not anticipate significant risks of adverse effects on these protected species as a result of implementing the proposed action.

If you have any further questions, please contact our Coastal Georgia Sub Office biologist, Gail Martinez, at 912-832-8739 extension 7.

Sincerely,

Strant Colwell

Strant Colwell
Coastal Georgia Supervisor

TRIBAL CONTACT LIST

Native American Tribal Government	Address
Ann Denson Tucker, Chairwoman Muscogee Nation of Florida	278 Church Road Ponce de Leon, FL 32455
Stephanie Bryan, Chairwoman Poarch Band of Creek Indians	5811 Jack Springs Rd. Atmore, AL 36502
Kenneth Chambers, Principal Chief Seminole Nation of Oklahoma	P.O. Box 1498 Wewoka, OK 74884
James Billie, Chairman Seminole Tribe of Florida	HC-61, Box 21-A Clewiston, FL 33440
Lovelin Poncho, Chairman Coushatta Tribe of Louisiana	P.O. Box 818 Elton, LA 70532
Brenda Shemayne Edwards, Chairman Caddo Nation	P.O. Box 487 Binger, OK 73009
Bill John Baker, Principal Chief The Cherokee Nation	P.O. Box 948 Tahlequah, OK 74465
Emman Spain, Tribal HPO Muscogee (Creek) Nation	P.O. Box 580 Okmulgee, OK 74447
George Scott, Town King Thlopthlocco Tribal Town	P.O. Box 188 Okemah, OK 75859
George Wickliffe, Chief United Keetowah Band of Cherokee	P.O. Box 746 Tahlequah, OK 74465
Stephanie Bryan, Chairwoman Poarch Band of Creek Indians	5811 Jack Springs Rd. Atmore, AL 36502
Jeremiah Hobia, Chief Kialegee Tribal Town	P.O. Box 332 Wetumka, OK 74883
Colabe III Clem Sylestine, Principal Chief Alabama Coushatta Tribe of Texas	571 State Park Road 56 Livingston, TX 77351
Tarpie Yargee, Chief Alabama-Quassarte Tribal Town Creek Nations of Indians, Oklahoma	P.O. Box 187 Wetumka, OK 74883

TRIBAL LETTER: on following page

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

AUG 0 8 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB GA 31699

Ann Denson Tucker, Chairwoman
Muscogee Nation of Florida
278 Church Road
Ponce de Leon, FL 32455

Dear Chairwoman Tucker

The United States Air Force is in the process of preparing an Environmental Assessment (EA) at Moody Air Force Base (AFB), Georgia (GA) to assess the potential environmental consequences associated with implementation of the approved 2014-2017 Moody Air Force Base (AFB) Integrated Natural Resources Management Plan (INRMP). Moody is located in south central Georgia, north of the city of Valdosta in Lowndes County (Attachment 1). The Sikes Act requires military installations to develop and implement a cooperative INRMP in concert with the U.S. Fish and Wildlife Service and state wildlife management agencies (e.g. Georgia Department of Natural Resources (DNR)). The Moody AFB INRMP was prepared to meet natural resources regulatory requirements while ensuring no net loss in the capability of military installation lands to support the military mission of the installation. At this time, only the proposed action and the no action alternative are being considered.

The INRMP is based on an interdisciplinary approach to ecosystem management and addresses wildlife and forest management goals and objectives, as well as the conservation and enhancement of wetlands and protected species in the context of the military mission. Management plans addressed in the INRMP are focused on the unimproved areas of the installation and do not include the management of improved grounds, including grass and landscape maintenance, which are addressed in other installation plans and documents. The INRMP does not assess potential environmental consequences of each action; therefore an environmental assessment will be completed to evaluate any potential environmental impacts of the actions and will include Endangered Species Act and National Historic Preservation Act consultation requirements.

In accordance with Executive Order 13175, Consultation with Indian Tribal Governments, and Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations at 36 CFR Part 800, the USAF would like to initiate government-to-government consultation regarding the implementation of the INRMP proposal. The USAF requests your input in identifying any issues or areas of concern you feel should be addressed in the environmental analysis. Additionally, please let us know if you believe this proposal might adversely affect any traditional cultural properties, including those of religious significance to the tribe.

To ensure the USAF has sufficient time to consider your input in the preparation of the Draft EA, please forward written issues or concerns to the EA Project Manager, Mr. Hank Santicola at 23d Civil Engineer Squadron, 3485 Georgia Street, Moody AFB GA 31699. Though we will consider comments received at any time during the environmental impact analysis process, to the extent possible, we would

like to hear from you within 30 days of receipt of this letter. If you have any questions, please contact Mr. Santicola at (229) 257-2396 or Henry.Santicola.2@us.af.mil. Thank you in advance for your assistance in this effort.

Sincerely

CHAD P. FRANKS, Colonel, USAF
Commander

Attachment:
Location of Moody AFB, Georgia

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

AUG 0 8 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB GA 31699

Bill John Baker, Principal Chief
The Cherokee Nation
P.O. Box 948
Tahlequah, OK 74465

Dear Mr. Baker

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

AUG 0 8 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB GA 31699

Brenda Shemayne Edwards, Chairman
Caddo Nation
P.O. Box 487
Binger, OK 73009

Dear Chairman Edwards

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MOODY AIR FORCE BASE GEORGIA

AUG 0 8 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB GA 31699

Colabe III Clem Sylestine, Principal Chief
Alabama Coushatta Tribe of Texas
571 State Park Road 56
Livingston, TX 77351

Dear Mr. Sylestine

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HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

AUG 0 8 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB GA 31699

Emman Spain, Tribal Historic Preservation Officer
Muscogee (Creek) Nation
P.O. Box 580
Okmulgee, OK 74447

Dear Mr. Spain

The United States Air Force is in the process of preparing an Environmental Assessment (EA) at Moody Air Force Base (AFB), Georgia (GA) to assess the potential environmental consequences associated with implementation of the approved 2014-2017 Moody Air Force Base (AFB) Integrated Natural Resources Management Plan (INRMP). Moody is located in south central Georgia, north of the city of Valdosta in Lowndes County (Attachment 1). The Sikes Act requires military installations to develop and implement a cooperative INRMP in concert with the U.S. Fish and Wildlife Service and state wildlife management agencies (e.g. Georgia Department of Natural Resources (DNR)). The Moody AFB INRMP was prepared to meet natural resources regulatory requirements while ensuring no net loss in the capability of military installation lands to support the military mission of the installation. At this time, only the proposed action and the no action alternative are being considered.

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MOODY AIR FORCE BASE GEORGIA

AUG 0 8 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB GA 31699

George Scott, Town King
Thlopthlocco Tribal Town
P.O. Box 188
Okemah, OK 75859

Dear Mr. Scott

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HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

AUG 0 8 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB GA 31699

George Wickliffe, Chief
United Keetowah Band of Cherokee
P.O. Box 746
Tahlequah, OK 74465

Dear Mr. Wickliffe

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MOODY AIR FORCE BASE GEORGIA

AUG 0 8 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB GA 31699

James Billie, Chairman
Seminole Tribe of Florida
HC-61, Box 21-A
Clewiston, FL 33440

Dear Chairman Billie

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Sincerely

CHAD P. FRANKS, Colonel, USAF
Commander

Attachment:
Location of Moody AFB, Georgia

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

AUG 0 8 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB GA 31699

Jeremiah Hobia, Chief
Kialegee Tribal Town
P.O. Box 332
Wetumka, OK 74883

Dear Mr. Hobia

The United States Air Force is in the process of preparing an Environmental Assessment (EA) at Moody Air Force Base (AFB), Georgia (GA) to assess the potential environmental consequences associated with implementation of the approved 2014-2017 Moody Air Force Base (AFB) Integrated Natural Resources Management Plan (INRMP). Moody is located in south central Georgia, north of the city of Valdosta in Lowndes County (Attachment 1). The Sikes Act requires military installations to develop and implement a cooperative INRMP in concert with the U.S. Fish and Wildlife Service and state wildlife management agencies (e.g. Georgia Department of Natural Resources (DNR)). The Moody AFB INRMP was prepared to meet natural resources regulatory requirements while ensuring no net loss in the capability of military installation lands to support the military mission of the installation. At this time, only the proposed action and the no action alternative are being considered.

The INRMP is based on an interdisciplinary approach to ecosystem management and addresses wildlife and forest management goals and objectives, as well as the conservation and enhancement of wetlands and protected species in the context of the military mission. Management plans addressed in the INRMP are focused on the unimproved areas of the installation and do not include the management of improved grounds, including grass and landscape maintenance, which are addressed in other installation plans and documents. The INRMP does not assess potential environmental consequences of each action; therefore an environmental assessment will be completed to evaluate any potential environmental impacts of the actions and will include Endangered Species Act and National Historic Preservation Act consultation requirements.

In accordance with Executive Order 13175, Consultation with Indian Tribal Governments, and Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations at 36 CFR Part 800, the USAF would like to initiate government-to-government consultation regarding the implementation of the INRMP proposal. The USAF requests your input in identifying any issues or areas of concern you feel should be addressed in the environmental analysis. Additionally, please let us know if you believe this proposal might adversely affect any traditional cultural properties, including those of religious significance to the tribe.

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Commander

Attachment:
Location of Moody AFB, Georgia

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

AUG 0 8 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB GA 31699

Kenneth Chambers, Principal Chief
Seminole Nation of Oklahoma
P.O. Box 1498
Wewoka, OK 74884

Dear Mr. Chambers

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CHAD P. FRANKS, Colonel, USAF
Commander

Attachment:
Location of Moody AFB, Georgia

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

AUG 0 8 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB GA 31699

Lovelin Poncho, Chairman
Coushatta Tribe of Louisiana
P.O. Box 818
Elton, LA 70532

Dear Chairman Poncho

The United States Air Force is in the process of preparing an Environmental Assessment (EA) at Moody Air Force Base (AFB), Georgia (GA) to assess the potential environmental consequences associated with implementation of the approved 2014-2017 Moody Air Force Base (AFB) Integrated Natural Resources Management Plan (INRMP). Moody is located in south central Georgia, north of the city of Valdosta in Lowndes County (Attachment 1). The Sikes Act requires military installations to develop and implement a cooperative INRMP in concert with the U.S. Fish and Wildlife Service and state wildlife management agencies (e.g. Georgia Department of Natural Resources (DNR)). The Moody AFB INRMP was prepared to meet natural resources regulatory requirements while ensuring no net loss in the capability of military installation lands to support the military mission of the installation. At this time, only the proposed action and the no action alternative are being considered.

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Commander

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Location of Moody AFB, Georgia

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

AUG 0 8 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB GA 31699

Stephanie Bryan, Chairwoman
Poarch Band of Creek Indians
5811 Jack Springs Rd.
Atmore, AL 36502

Dear Chairwoman Bryan

The United States Air Force is in the process of preparing an Environmental Assessment (EA) at Moody Air Force Base (AFB), Georgia (GA) to assess the potential environmental consequences associated with implementation of the approved 2014-2017 Moody Air Force Base (AFB) Integrated Natural Resources Management Plan (INRMP). Moody is located in south central Georgia, north of the city of Valdosta in Lowndes County (Attachment 1). The Sikes Act requires military installations to develop and implement a cooperative INRMP in concert with the U.S. Fish and Wildlife Service and state wildlife management agencies (e.g. Georgia Department of Natural Resources (DNR)). The Moody AFB INRMP was prepared to meet natural resources regulatory requirements while ensuring no net loss in the capability of military installation lands to support the military mission of the installation. At this time, only the proposed action and the no action alternative are being considered.

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Commander

Attachment:
Location of Moody AFB, Georgia

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

AUG 0 8 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB GA 31699

Tarpie Yargee, Chief
Alabama-Quassarte Tribal Town
Creek Nations of Indians, Oklahoma
P.O. Box 187
Wetumka, OK 74883

Dear Mr. Yargee

The United States Air Force is in the process of preparing an Environmental Assessment (EA) at Moody Air Force Base (AFB), Georgia (GA) to assess the potential environmental consequences associated with implementation of the approved 2014-2017 Moody Air Force Base (AFB) Integrated Natural Resources Management Plan (INRMP). Moody is located in south central Georgia, north of the city of Valdosta in Lowndes County (Attachment 1). The Sikes Act requires military installations to develop and implement a cooperative INRMP in concert with the U.S. Fish and Wildlife Service and state wildlife management agencies (e.g. Georgia Department of Natural Resources (DNR)). The Moody AFB INRMP was prepared to meet natural resources regulatory requirements while ensuring no net loss in the capability of military installation lands to support the military mission of the installation. At this time, only the proposed action and the no action alternative are being considered.

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Attachment:
Location of Moody AFB, Georgia

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

SEP 05 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Ste 1
Moody AFB GA 31699

Bill John Baker, Principal Chief
The Cherokee Nation
P.O. Box 948
Tahlequah, OK 74465

Dear Mr. Baker

The United States Air Force (USAF) is preparing an Environmental Assessment to evaluate potential environmental impacts associated with implementation of the approved 2014-2017 Integrated Natural Resources Management Plan at Moody Air Force Base (AFB). On 8 August, 2014, the USAF invited you to participate in government-to-government consultation regarding this proposal. The USAF welcomes any input you would like to see included in the analysis. Though we will consider comments received at any time during the environmental impact analysis process, your input is most valuable to us when received early in our planning process, especially during the next few weeks. Please direct written issues or concerns to Mr. Hank Santicola, Environmental Assessment Program Manager, 3485 Georgia Street, Moody AFB GA 31699 or through email at Henry.Santicola.2@us.af.mil. Mr Santicola can also be contacted at (229) 257-2396. Thank you in advance for your assistance in this effort.

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CHAD P. FRANKS, Colonel, USAF
Commander

Attachment:
Original Government-to-Government Consultation Letter to Chief Bill John Baker, dated 8 Aug 14

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Ste 1
Moody AFB GA 31699

SEP 05 2014

Stephanie Bryan, Chairwoman
Poarch Band of Creek Indians
5811 Jack Springs Rd.
Atmore, AL 36502

Dear Chairwoman Bryan

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Attachment:
Original Government-to-Government Consultation Letter to Chairwoman Bryan, dated 8 Aug 14

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Ste 1
Moody AFB GA 31699

SEP 05 2014

George Scott, Town King
Thlopthlocco Tribal Town
P.O. Box 188
Okemah, OK 75859

Dear Mr. Scott

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Commander

Attachment:
Original Government-to-Government Consultation Letter to Mr. George Scott, dated 8 Aug 14

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

SEP 05 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Ste 1
Moody AFB GA 31699

Kenneth Chambers, Principal Chief
Seminole Nation of Oklahoma
P.O. Box 1498
Wewoka, OK 74884

Dear Mr. Chambers

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CHAD P. FRANKS, Colonel, USAF
Commander

Attachment:
Original Government-to-Government Consultation Letter to Mr. Kenneth Chambers, dated 8 Aug 14

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

SEP 05 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Ste 1
Moody AFB GA 31699

James Billie, Chairman
Seminole Tribe of Florida
30290 Josie Billie Hwy, PMB
Clewiston, FL 33440

Dear Chairman Billie

The United States Air Force (USAF) is preparing an Environmental Assessment to evaluate potential environmental impacts associated with implementation of the approved 2014-2017 Integrated Natural Resources Management Plan at Moody Air Force Base (AFB). On 8 August, 2014, the USAF invited you to participate in government-to-government consultation regarding this proposal. The USAF welcomes any input you would like to see included in the analysis. Though we will consider comments received at any time during the environmental impact analysis process, your input is most valuable to us when received early in our planning process, especially during the next few weeks. Please direct written issues or concerns to Mr. Hank Santicola, Environmental Assessment Program Manager, 3485 Georgia Street, Moody AFB GA 31699 or through email at Henry.Santicola.2@us.af.mil. Mr Santicola can also be contacted at (229) 257-2396. Thank you in advance for your assistance in this effort.

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HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

SEP 05 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Ste 1
Moody AFB GA 31699

Jeremiah Hobia, Chief
Kialegee Tribal Town
P.O. Box 332
Wetumka, OK 74883

Dear Mr. Hobia

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CHAD P. FRANKS, Colonel, USAF
Commander

Attachment:
Original Government-to-Government Consultation Letter to Mr. Jeremiah Hobia, dated 8 Aug 14

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

SEP 05 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Ste 1
Moody AFB GA 31699

Lovelin Poncho, Chairman
Coushatta Tribe of Louisiana
P.O. Box 818
Elton, LA 70532

Dear Chairman Poncho

The United States Air Force (USAF) is preparing an Environmental Assessment to evaluate potential environmental impacts associated with implementation of the approved 2014-2017 Integrated Natural Resources Management Plan at Moody Air Force Base (AFB). On 8 August, 2014, the USAF invited you to participate in government-to-government consultation regarding this proposal. The USAF welcomes any input you would like to see included in the analysis. Though we will consider comments received at any time during the environmental impact analysis process, your input is most valuable to us when received early in our planning process, especially during the next few weeks. Please direct written issues or concerns to Mr. Hank Santicola, Environmental Assessment Program Manager, 3485 Georgia Street, Moody AFB GA 31699 or through email at Henry.Santicola.2@us.af.mil. Mr Santicola can also be contacted at (229) 257-2396. Thank you in advance for your assistance in this effort.

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Attachment:
Original Government-to-Government Consultation Letter to Chairman Lovelin Poncho, dated 8 Aug 14

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

SEP 05 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Ste 1
Moody AFB GA 31699

Ann Denson Tucker, Chairwoman
Muscogee Nation of Florida
278 Church Road
Ponce de Leon, FL 32455

Dear Chairwoman Tucker

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CHAD P. FRANKS, Colonel, USAF
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Attachment:
Original Government-to-Government Consultation Letter to Chairwoman Tucker, dated 8 Aug 14

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

SEP 05 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Ste 1
Moody AFB GA 31699

Brenda Shemayne Edwards, Chairman
Caddo Nation
P.O. Box 487
Binger, OK 73009

Dear Chairman Edwards

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Attachment:
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HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

SEP 05 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Ste 1
Moody AFB GA 31699

Colabe III Clem Sylestine, Principal Chief
Alabama Coushatta Tribe of Texas
571 State Park Road 56
Livingston, TX 77351

Dear Chief Sylestine

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Attachment:
Original Government-to-Government Consultation Letter to Chief Sylestine, dated 8 Aug 14

DEPARTMENT OF THE AIR FORCE
23D CIVIL ENGINEER SQUADRON (ACC)
MOODY AIR FORCE BASE GEORGIA

MEMORANDUM FOR TRIBAL HISTORIC AND CULTURAL PRESERVATION OFFICERS

FROM: 23 CES/CEIE
3485 Georgia Street
Moody AFB, GA 31699-1707

SUBJECT: Proposed Environmental Assessment at Moody AFB, GA

1. The United States Air Force is in the process of preparing an Environmental Assessment (EA) at Moody Air Force Base (AFB), Georgia (GA) to assess the potential environmental consequences associated with implementation of the approved 2014-2017 Moody Air Force Base (AFB) Integrated Natural Resources Management Plan (INRMP). Moody is located in south central Georgia, north of the city of Valdosta in Lowndes County (Attachment 1). The Sikes Act requires military installations to develop and implement a cooperative INRMP in concert with the U.S. Fish and Wildlife Service and state wildlife management agencies (e.g. Georgia Department of Natural Resources (DNR)). The Moody AFB INRMP was prepared to meet natural resources regulatory requirements while ensuring no net loss in the capability of military installation lands to support the military mission of the installation. There are no activites in the proposed action that occur within arechelogical sites that are eligible for listing on the National Historic Register.

2. The Moody AFB INRMP was prepared to assist the Moody AFB installation commander with the conservation and rehabilitation of natural resources consistent with the military mission of Moody AFB for the next 4 years and has been developed to meet the statutory provision of the Sikes Act (16 United States [U.S.] Code [USC] 670a (b) (1)(I)) that there shall be "no net loss in the capability of military installation lands to support the military mission of the installation." The INRMP is based on an interdisciplinary approach to ecosystem management and addresses wildlife and forest management goals and objectives, as well as the conservation and enhancement of wetlands and protected species in the context of the military mission. Management plans addressed in the INRMP are focused on the unimproved areas of the installation and do not include the management of improved grounds, including grass and landscape maintenance, which are addressed in other installation plans and documents. The INRMP does not assess potential environmental consequences of each action; therefore an environmental assessment will be completed to evaluate any potential environmental impacts of the actions and will include Endangered Species Act and National Historic Preservation Act consultation requirements.

3. The EA for the proposed action will be prepared in compliance with the National Environmental Policy Act of 1969, 42 United States Code (USC), the Council on Environmental Quality NEPA Regulations, 40 Code of Federal Regulations (CFR), and the Air Force's

Environmental Impact Analysis Process, 32 CFR 989. As part of this EA, we request your assistance in identifying potential areas of environmental impact to be addressed.

4. If you have any specific items of interest about the proposal, we would like to hear from you within 30-days of receipt of this letter. Please contact the EA Project Manager, Mr. Hank Santicola at 23d Civil Engineer Squadron, 3485 Georgia Street, Moody AFB GA 31699, or via e-mail at henry.santicola.2@us.af.mil, or by phone at (229) 257-2396 with any questions or concerns you or your staff may have.

HENRY J. SANTICOLA
Environmental Planner

Attachment:
Location of Moody AFB, Georgia

MUSCOGEE (CREEK) NATION

Cultural Preservation — Johnnie Jacobs – Manager

July 24, 2015

Mr. Henry Santicola
NEPA/Environmental Planner
23 CES/CEIEA
Moody AFB, GA 31699

RE: Moody INRMP-Timber Harvesting
Moody AFB, Lowndes Co., GA

Mr. Santicola:

Thank you for contacting the Muscogee (Creek) Nation Cultural Preservation Office in reference to your request for comments regarding the above project.

After review of the material provided, it has been determined that the Muscogee (Creek) Nation has no objections to this project.

Please consider this letter as our concurrence to your request and findings and support of the planned activities and projects. .

Should further information or comment be required please do not hesitate to contact me at (918) 732-7732 or by email at davidp@mcn-nsn.gov. Thank you.

Sincerely,

David J. Proctor
Muscogee (Creek) Nation
Cultural Preservation Dept.

DEPARTMENT OF THE AIR FORCE
23D CIVIL ENGINEER SQUADRON (ACC)
MOODY AIR FORCE BASE GEORGIA

28 APR 2015

MEMORANDUM FOR Ms. Jennifer Dixon
Historic Preservation Division, GA Department of Natural Resources
Jewett Center for Historic Preservation
2610 GA Hwy 155, SW
Stockbridge GA 30281

FROM: 23 CES/CD
3485 Georgia Street
Moody AFB GA 31699-1707

SUBJECT: Section 106 Consultation for Implementation on Integrated Natural Resources Management Plan (INRMP), Moody AFB GA

1. In accordance with 54 U.S.C. 306108 (commonly known as Section 106 of the National Historic Preservation Act), Moody AFB (Attachment 1) is requesting consultation with your agency in regards to the proposed implementation of the INRMP at Moody AFB, Lanier and Lowndes Counties, GA. The Area of Potential Effect (APE) for this project consists of the undeveloped land within the boundary of Moody AFB (Attachment 2).

2. The purpose of the INRMP is to direct and support the installation mission through the conservation of natural resources. The INRMP is based on an interdisciplinary approach to ecosystem management and addresses wildlife and forest management goals and objectives, as well as the conservation and enhancement of wetlands and endangered species within the context of the military mission. Management plans addressed in the INRMP are focused only on the unimproved areas of the installation and do not include the management of improved grounds, including grass and landscape maintenance. There are no structures or facilities within the areas proposed for natural resources management activities. Generally, the actions proposed for implementation under the INRMP that have the potential to impact archeological sites on Moody AFB include:

a. Prescribed burning of approximately 800 acres annually.

b. Invasive species control, 55 acres total (2015: 40 acres; 2016: 5 acres; 2017: 5 acres; 2018: 5 acres)

c. Hardwood midstory control through chemical herbicide applications, 250 acres total (2015: 235 acres; 2016: 15 acres)

d. Hardwood midstory control through mechanical means, 105 acres total (2015: 105 acres)

e. Timber harvest, selective thinning, 123 acres total (2015: 89 acres; 2016: 34 acres)

f. Timber harvest, clearcut/regeneration, 56 acres (2015: 16 acres; 2016: 20 acres; 2018: 20 acres)

g. Timber harvest, seed tree regeneration, 104 acres (2015: 42 acres; 2017: 46 acres; 2018: 16 acres)

h. Site preparation and planting of longleaf pine, 12 acres total (2016)

3. Summary of Archeological Investigations at Moody AFB:

a. Phase I archeological surveys of Moody AFB and Grand Bay Range were conducted by Panamerican Consultants, Inc., from 1994 to 1995. This initial survey identified 21 archeological sites, with seven sites potentially eligible for listing under the NHPA. Maps showing the location of all identified archeological sites and their proximity to the APE are attached (Attachments 3 and 4).

b. Subsequent Phase II investigations were completed for the seven sites potentially eligible for listing, resulting in a determination that only two sites were actually eligible for listing, Site 9LW63 and Site 9LW71, both outside the APE for this project (Attachment 4).

1) Site 9LW71 is a multicomponent extractive/base camp prehistoric site affiliated with the Late Paleoindian, Early Archaic, Deptford, and Weeden Island manifestations. Originally, this site was comprised of two separate sites (9LW70 and 9LW71), but the subsequent Phase II survey of 9LW71 completed in November 1999 recommended that these two sites be combined into one consolidated site to be designated 9LW71, and recommended the new, larger site as eligible for listing under the NRHP.

2) Site 9LW63 is a multi-component prehistoric artifact scatter located on a small landform between adjacent wetlands approximately 850 feet southeast of the proposed Airfield Improvements project area. This site contains intact activity areas with temporally diagnostic artifacts. A Phase II investigation of 9LW63 in November 2008 recommended this site as eligible for listing under the NRHP.

4. There are no eligible archeological sites or historical properties within the APE for this project, and projects similar in scope to the proposed actions have been approved through your office in the past (Attachment 5).

5. The Air Force does not believe the proposed action has the potential to adversely affect any cultural resources, and we request your review of our determination of no adverse effect in accordance with 54 U.S.C. 306108 (commonly known as Section 106 of the National Historic

Preservation Act). If you have any comments or inputs on this proposed action or need any additional information, please contact Mr. Gregory Lee, 23 CES/CEIE, 7258 Robbins Road, Moody AFB, GA 31699, gregory.lee.5@us.af.mil, (229) 257-5881.

JOHN L. EUNICE, III, DAF
Deputy Base Civil Engineer

Attachments:
1. Location of Moody AFB
2. Location of APE for Proposed INRMP Activities
3. Location of Archeological Sites at Moody AFB
4. Location of Cultural Resources in Relation to the APE
5. Previous Section 106 Consultations for Natural Resources Activities

General Location of Moody AFB, GA



Attach 1

Integrated Natural Resources Management Plan
Area of Potential Effect (APE)

Attach 2



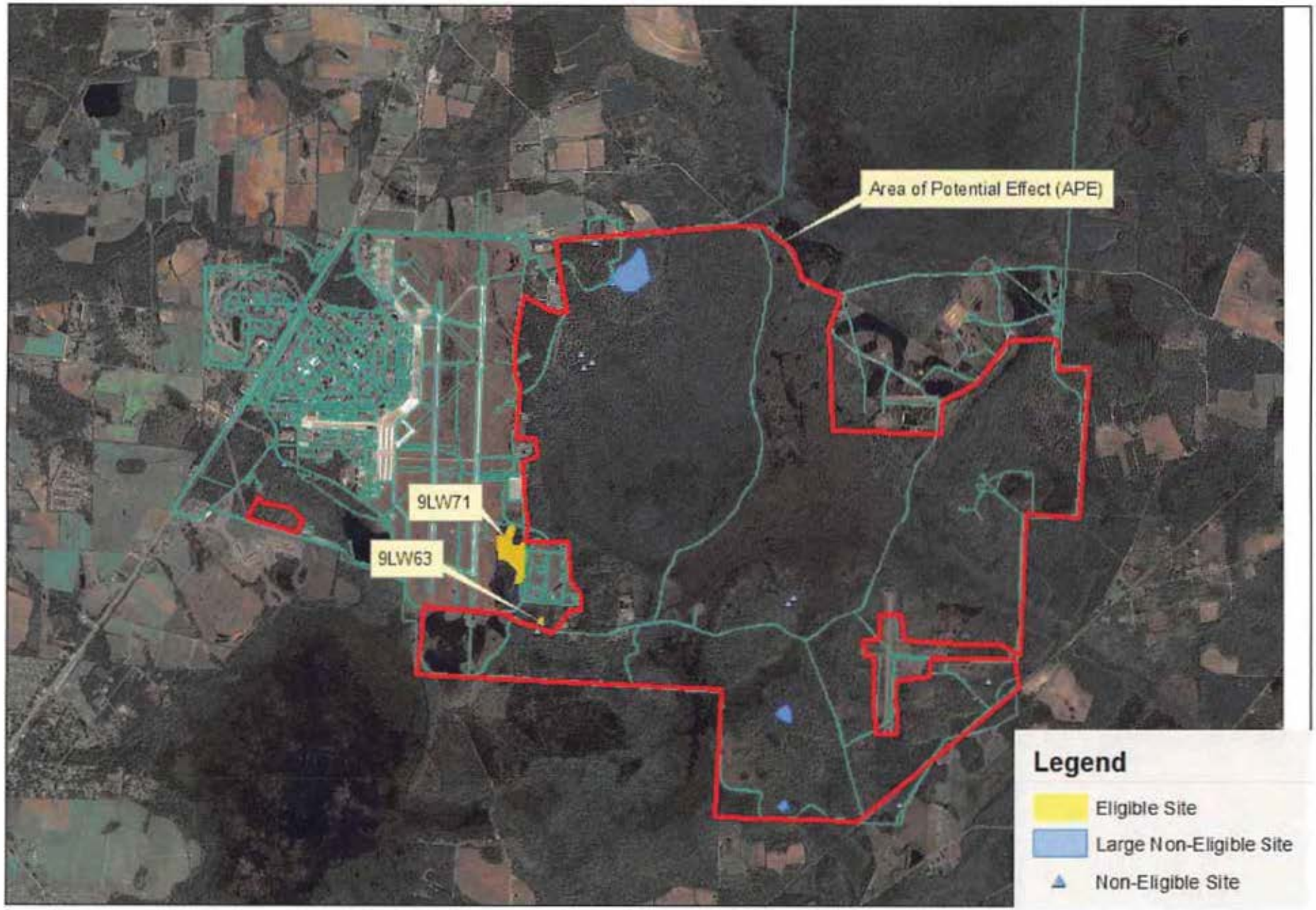
Archeological Sites Identified at Moody AFB, Georgia

Attach 3



Attach 1

Integrated Natural Resources Management Plan
Cultural Resources in Proximity to Area of Potential Effect (APE)



GEORGIA
DEPARTMENT OF NATURAL RESOURCES
HISTORIC PRESERVATION DIVISION

MARK WILLIAMS
COMMISSIONER

DR. DAVID CRASS
DIVISION DIRECTOR

January 13, 2014

John L. Eunice, III, DAF
Deputy Base Civil Engineer
Department of the Air Force
23D Civil Engineer Squadron (ACC)
Moody Air Force Base Georgia
Attn: Gregory Lee, Moody AFB

RE: Moody AFB: Proposed Forest Management Actions, 125 Acres, Midstory Vegetation Control
Lanier, et. al. Counties, Georgia
HP-131226-002

Dear Mr. Eunice:

The Historic Preservation Division (HPD) has received the information submitted concerning the above referenced undertaking. Our comments are offered to assist the US Department of the Air Force and Moody AFB in complying with provisions of Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA).

Based on the previous review of the Phase II archaeological report entitled *Archaeological Testing and National Register of Historic Places Evaluations of the Tick (9LW52) and Tock (9LW67) Sites, Moody Air Force Base, Lowndes County, Georgia*, HPD concurs that the proposed forest management actions will have **no effect** on historic properties that are listed or eligible for listing in the National Register of Historic Places (NRHP), as defined in 36 CFR Part 800.4(d)(1).

HPD has noticed that the site forms on GNAHRGIS for 9LW52 and 9LW67 do not have "recommended ineligible" circled; this should be amended. Additionally, neither HPD nor the Georgia Archaeological Site file has received an electronic final version of the Phase II report. Please submit one electronic copy of the final Geo-Marine, Inc. report to HPD. Please ensure the electronic copy is an optical character recognition enabled .pdf. For your information, the electronic copy will be sent to the Georgia Archaeological Site File at the University of Georgia-Athens for permanent retention.

Please refer to project number **HP-131226-002** in any future correspondence regarding this undertaking. If we may be of further assistance, please do not hesitate to contact Jennifer Dixon, Environmental Specialist, at (404) 651-6546 or jennifer.dixon@dnr.state.ga.us.

Sincerely,

Karen Anderson-Cordova
Program Manager
Environmental Review and Preservation Planning

KAC:jad

Attach 5

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
HISTORIC PRESERVATION DIVISION

MARK WILLIAMS
COMMISSIONER

DR. DAVID CRASS
DIVISION DIRECTOR

January 3, 2012

John L. Eunice, III, DAF
Deputy Base Civil Engineer
Department of the Air Force
23rd Civil Engineering Squadron (ACC)
Moody Air Force Base Georgia
Attn: Gregory Lee (gregory.lee@moody.af.mil)

RE: Moody Air Force Base: Clear Trees within Airfield Environment
Lowndes County, Georgia
HP-111213-001

Dear Mr. Eunice:

The Historic Preservation Division (HPD) has reviewed the information submitted concerning the above referenced project. Our comments are offered to assist the Department of the Air Force and Moody Air Force Base in complying with the provisions of Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA).

The subject project consists of the clearing of trees in the southeast corner of the airfield grass at Moody Air Force Base. Based on the information provided, HPD concurs that archaeological site 9LW71 is eligible for listing on National Register of Historic Places (NRHP) and located within the proposed project's area of potential effects (APE). Additionally, HPD concurs that the subject project, as proposed, will have **no adverse effect** to archaeological resources within its APE, as defined in 36 CFR Part 800.5(d)(1).

This letter evidences consultation with our office for compliance with Section 106 of the NHPA. It is important to remember that any future changes to this project as it is currently proposed may require additional consultation. HPD encourages federal agencies and project applicants to discuss such changes with our office to ensure that potential effects to historic resources are adequately considered in project planning.

Please refer to project number **HP-111213-001** in any future correspondence on this project. If we may be of further assistance, please do not hesitate to contact Elizabeth Shirk, Environmental Review Coordinator, at (404) 651-6624 or Erin Parr, Environmental Review Specialist, at (404) 651-6546.

Sincerely,

Karen Anderson-Córdova
Program Manager
Environmental Review and Preservation Planning

KAC:ebp

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
HISTORIC PRESERVATION DIVISION

CHRIS CLARK
COMMISSIONER

DR. DAVID CRASS
DIVISION DIRECTOR

November 30, 2010

Martin J. Pantaze, Major, USAF
Commander
Department of the Air Force
23rd Civil Engineer Squadron (ACC)
Moody Air Force Base, Georgia

RE: Moody AFB: Remove Stumps & Trees, North-Central Boundary
Lanier & Lowndes Counties, Georgia
HP-101118-007

Dear Major Pantaze:

The Historic Preservation Division (HPD) has reviewed the information submitted concerning the above-referenced project. Our comments are offered to assist the US Department of the Air Force (USAF) and Moody Air Force Base (Moody AFB) in complying with the provisions of Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA).

The subject project consists of the removal of wood stumps and trees, the disturbance of soil, and the site preparation for planting near the north-central boundary of Moody AFB. Based on a previous archaeological survey and testing of site 9LN17, it was determined that site 9LN17 was not eligible for inclusion in the National Register of Historic Places (NRHP). Therefore, based on the information provided, HPD concurs that, as proposed, the project will have **no effect** on historic properties within its area of potential effects (APE).

Please refer to project number **HP-101118-007** in any future correspondence regarding this project. If we may be of further assistance, please do not hesitate to contact Elizabeth Shirk, Environmental Review Coordinator, at (404) 651-6624.

Sincerely,

Karen Anderson-Córdova
Program Manager
Environmental Review & Preservation Planning

KAC: mn

cc: Michael Jacobs, Southern GA RC

254 WASHINGTON STREET, SW | GROUND LEVEL | ATLANTA, GEORGIA 30334
404.656.2840 | FAX 404.657.1368 | WWW.GASHPO.ORG

Georgia Department of Natural Resources

Lonice C. Barrett, Commissioner

Historic Preservation Division

W. Ray Luce, Division Director and Deputy State Historic Preservation Officer
156 Trinity Avenue, S.W., Suite 101, Atlanta, GA 30303-3600
Telephone (404) 656-2840 Fax (404) 657-1040 http://www.gashpo.org

MEMORANDUM

TO: John L. Eunice III, Lt. Col., USAF
Commander
Department of the Air Force

FROM: Serena G. Bellew
Environmental Review Coordinator
Historic Preservation Division

RE: Finding of "No Historic Properties Affected"

Moody Air Force Base: Timber Sale and 820th Security Forces Training

Lowndes County, Georgia

HP010802-003

DATE: September 12, 2001

The Historic Preservation Division has reviewed the information received concerning the above-mentioned project. Our comments are offered to assist federal agencies and project applicants in complying with the provisions of Section 106 of the National Historic Preservation Act.

Based on the information submitted, HPD has determined that no historic properties or archaeological resources which are listed in or eligible for listing in the National Register of Historic Places will be affected by this undertaking. Please note that historic and/or archaeological resources may be located within the project's area of potential effect (APE), however, at this time it has been determined that they will not be impacted by the above-referenced project. Furthermore, any changes to this project as proposed will require further review by our office for compliance with the Section 106 process.

If we may be of further assistance contact me at (404) 651-6624. Please refer to the project number assigned above in any future correspondence regarding this project.

SGB:abl

cc: Andrea Gerhart, South Georgia RDC

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
HISTORIC PRESERVATION DIVISION

MARK WILLIAMS
COMMISSIONER

DR. DAVID CRASS
DIVISION DIRECTOR

May 21, 2015

John L. Eunice, III, DAF
Deputy Base Civil Engineer
23 CES/CD
3485 Georgia Street
Moody Air Force Base, Georgia 31699-1707
Attn: Gregory Lee

RE: Moody Air Force Base: Integrated Natural Resource Management Plan (INRMP)
Lanier and Lowndes Counties, Georgia
FP-140801-001

Dear Mr. Eunice:

The Historic Preservation Division (HPD) has received the information submitted concerning the above referenced undertaking. Our comments are offered to assist the U.S. Department of the Air Force and Moody Air Force Base (AFB) in complying with the provisions of Section 106 and Section 110 of the National Historic Preservation Act (NHPA).

The subject project consists of the implementation of the INRMP at Moody AFB in order to direct and support the installation mission through conservation of natural resources. Based on the information provided, HPD concurs that the proposed project will have **no adverse effect** on historic properties that are listed or eligible for listing in the National Register of Historic Places (NRHP), as defined in 36 CFR Part 800.5(d)(1), due to the location of the project and the measures outlined in the INRMP.

Please refer to project number **FP-140801-001** in any future correspondence regarding this project. If we may be of further assistance, please do not hesitate to contact me at jennifer.dixon@dnr.ga.gov or (770) 389-7851.

Sincerely,

Jennifer Dixon, MHP, LEED Green Associate
Program Manager
Environmental Review & Preservation Planning

2610 GA HWY 155, SW | STOCKBRIDGE, GA 30281
770.389.7844 | FAX 770.389.7878 | WWW.GEORGIASHPO.ORG

APPENDIX C

AIR QUALITY SUPPORTING DOCUMENTATION

Calculates Air Emissions from Prescribed Burning

Emission Factors from AP-42, Chapter 13.1	PM10 Source: (1)	PM2.5 Source: (2)	CO Source: (1)	VOC Source: (2)	NOX Source: (3)
	(g/kg)	(g/kg)	(g/kg)	(g/kg)	(g/kg)
Emission Factor	18.8	13.0	134.0	6.9	4.0

Sources:

1 = USEPA 1996. AP-42. Wildfires and Prescribed Burning. Table 13.1-4. Page 13.1-10. Southeast region, Average for the region.

2 = USEPA 1996. AP-42. Wildfires and Prescribed Burning. Table 13.1-3. Page 13.1-8. Sagebrush, Fire phase.

3 = USEPA 1996. AP-42. Wildfires and Prescribed Burning. Page 13.1-6. Paragraph 3.

Emissions of sulfur oxides are negligible

Total area to be burned (acres/year): 593 Source: Crain 2014

Mass of fuel consumed per acre (tons/acre): 3 Source: Crain 2014

Kilograms in a Ton: 907.185

Yearly Emissions	PM10	PM2.5	CO	VOC	NOX
grams per year	30,340,983.8	20,980,467.5	216,260,203.4	11,135,786.6	6,455,528.5

Grams in a Ton: 907,185

Yearly Emissions	PM10	PM2.5	CO	VOC	NOX
tons per year	**33.4**	**23.1**	**238.4**	**12.3**	**7.1**

Source: Crain, John. 2014. Email communication from Mr. John Crain (Moody AFB Forester) to Ms. Tanya Perry (HDR) regarding prescribed burning practices at Moody AFB.

Comparison of Air Emissions to Regional Emissions (tpy)					
Location	**PM_{10}**	**$PM_{2.5}$**	**CO**	**VOC**	**NO_x**
Lanier County	2,266	651	5,931	13,557	481
Lowndes County	8,746	2,367	33,591	25,765	6,476
Total	**11,012**	**3,018**	**39,522**	**39,322**	**6,957**
Percent of Regional	**0.3037%**	**0.7663%**	**0.6032%**	**0.0312%**	**0.1023%**

Summary of Air Emissions for 2015 (tpy)

Activity	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
Seed Tree Regeneration (Stand 2-08)--FY 2015	0.078	0.007	0.032	0.006	0.005	0.005	11.550
Timber Thinning Sale (Stand 2-19 and east 2-37)--FY2015	0.059	0.005	0.026	0.005	0.004	0.004	7.582
Clearcut (Stands 1-10 & east 2-07)--FY2015	0.035	0.003	0.015	0.003	0.002	0.002	4.233
Timber Thinning Sale (Stands 2-08 and 2-24)--FY2015	0.062	0.005	0.025	0.005	0.004	0.004	8.376
Hardwood Midstory Control (Chemical)--FY2015	0.008	0.001	0.003	0.001	0.001	0.001	1.023
Hardwood Midstory Control (Mechanical)--FY2015	0.026	0.002	0.009	0.002	0.002	0.002	3.215
TOTAL	**0.268**	**0.023**	**0.110**	**0.021**	**0.019**	**0.018**	**35.979**

Comparison of Air Emissions to Regional Emissions (tpy)						
Location	**NO_x**	**VOC**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Lanier County	481	13,557	5,931	22	2,266	651
Lowndes County	6,476	25,765	33,591	784	8,746	2,367
Total	**6,957**	**39,322**	**39,522**	**806**	**11,012**	**3,018**
Percent of Regional	**0.0039%**	**0.0001%**	**0.0003%**	**0.0026%**	**0.0002%**	**0.0006%**

Estimates Air Emissions from Cutting Equipment

Equipment	Number	Hours	Horsepower
Feller buncher	1	20	241
Skidder	2	32	175
Loader	1	40	188
Chainsaw	1	4	4

Sources: Number of units and hours per unit provided by John Crain. Horsepower rating for the chainsaw provided by John Crain. Horsepower rating for the feller/buncher, skidder, and loader taken from various online sources for commerically-available products.

Emission Factors (lb/1000 hp hr)								
Equipment	**Load Factor**	**CO**	**VOC**	**NOx**	**SO2**	**CO2**	**PM10**	**PM2.5**
Diesel Forest Equipment-Feller/Buncher/Skidder	59%	3.26	0.71	9.57	0.84	1186.29	0.66	0.64
Diesel Rubber Tire Loader	59%	4.87	0.86	11.75	0.84	1188.5	0.82	0.79
2 Stroke Chain Saws <6 HP (Commercial)	70%	764.61	176.42	2.25	0.33	1625.09	20.97	19.29

Source: U.S. Air Force (USAF). 2013. *Air Force Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants for Mobile Sources at U.S. Air Force Installations.* Table 4-1. Criteria Pollutant Emission Factors for Nonroad Engine and Equipment. January 2013.

Project Emission Estimates (lb/year)								
Equipment		**CO**	**VOC**	**NOx**	**SO2**	**CO2**	**PM10**	**PM2.5**
Diesel Forest Equipment-Feller/Buncher		9.271	2.019	27.215	2.389	3373.572	1.877	1.820
Diesel Forest Equipment-Skidder		21.542	4.692	63.239	5.551	7839.004	4.361	4.229
Diesel Rubber Tire Loader		21.607	3.816	52.132	3.727	5273.137	3.638	3.505
2 Stroke Chain Saws <6 HP (Commercial)		8.564	1.976	0.025	0.004	18.201	0.235	0.216
TOTAL		**60.984**	**12.502**	**142.611**	**11.670**	**16503.914**	**10.111**	**9.770**

TOTAL (tons/year)		**0.030**	**0.006**	**0.071**	**0.006**	**8.252**	**0.005**	**0.005**

Estimates Air Emissions from Hauling Wood to the Mill

Heavy Duty Diesel Vehicle (HDDV) Average Emission Factors (grams/mile)

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
HDDV	**2.452**	**0.309**	**0.724**	**0.012**	**0.097**	**0.071**	**1243.400**

Notes:
Emission factors for Diesel HDDV Heavy-Duty Vehicles in Georgia at low altitude for 2015 (Table 5-11. On-Road Vehicle Factors--2015)

Number of Loads to each Respective Mill

Number of Loads:		22	with a round Trip Distance of:	38	miles
Number of Loads:		20	with a round Trip Distance of:	50	miles
Number of Loads:		3	with a round Trip Distance of:	190	miles
Source: Number of loads and distances to each mill provided by John Crain.					

HDDV Haul Truck Emissions

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
lbs	**13.006**	**1.639**	**3.840**	**0.064**	**0.515**	**0.377**	**6595.283**
tons	**0.007**	**0.001**	**0.002**	**0.000**	**0.000**	**0.000**	**3.298**

Example Calculation: NO_x emissions (lbs) = 30 miles per trip * 5,021 trips * NO_x emission factor (g/mile) * lb/453.6 g

Seed Tree Regeneration (Stand 2-08)--FY 2015

Project Summary (tpy)

Activity	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
Air Emissions from Cutting Equipment	0.071	0.006	0.030	0.006	0.005	0.005	8.252
Air Emissions from Hauling Wood to the Mill	0.007	0.001	0.002	0.000	0.000	0.000	3.298
TOTAL	**0.078**	**0.007**	**0.032**	**0.006**	**0.005**	**0.005**	**11.550**

Estimates Air Emissions from Cutting Equipment

Equipment	Number	Hours	Horsepower
Feller buncher	1	16	241
Skidder	1	40	175
Loader	1	40	188
Chainsaw	1	4	4

Sources: Number of units and hours per unit provided by John Crain. Horsepower rating for the chainsaw provided by John Crain. Horsepower rating for the feller/buncher, skidder, and loader taken from various online sources for commerically-available products.

Emission Factors (lb/1000 hp hr)								
Equipment	**Load Factor**	**CO**	**VOC**	**NOx**	**SO2**	**CO2**	**PM10**	**PM2.5**
Diesel Forest Equipment-Feller/Buncher/Skidder	59%	3.26	0.71	9.57	0.84	1186.29	0.66	0.64
Diesel Rubber Tire Loader	59%	4.87	0.86	11.75	0.84	1188.5	0.82	0.79
2 Stroke Chain Saws <6 HP (Commercial)	70%	764.61	176.42	2.25	0.33	1625.09	20.97	19.29

Source: U.S. Air Force (USAF). 2013. *Air Force Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants for Mobile Sources at U.S. Air Force Installations.* Table 4-1. Criteria Pollutant Emission Factors for Nonroad Engine and Equipment. January 2013.

Project Emission Estimates (lb/year)								
Equipment		**CO**	**VOC**	**NOx**	**SO2**	**CO2**	**PM10**	**PM2.5**
Diesel Forest Equipment-Feller/Buncher		7.417	1.615	21.772	1.911	2698.857	1.502	1.456
Diesel Forest Equipment-Skidder		13.464	2.932	39.524	3.469	4899.378	2.726	2.643
Diesel Rubber Tire Loader		21.607	3.816	52.132	3.727	5273.137	3.638	3.505
2 Stroke Chain Saws <6 HP (Commercial)		8.564	1.976	0.025	0.004	18.201	0.235	0.216
TOTAL		**51.051**	**10.339**	**113.454**	**9.111**	**12889.573**	**8.100**	**7.820**

TOTAL (tons/year)		**0.026**	**0.005**	**0.057**	**0.005**	**6.445**	**0.004**	**0.004**

Estimates Air Emissions from Hauling Wood to the Mill

Heavy Duty Diesel Vehicle (HDDV) Average Emission Factors (grams/mile)

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
HDDV	**2.452**	**0.309**	**0.724**	**0.012**	**0.097**	**0.071**	**1243.400**

Notes:

Emission factors for Diesel HDDV Heavy-Duty Vehicles in Georgia at low altitude for 2015 (Table 5-11. On-Road Vehicle Factors--2015)

Number of Loads to each Respective Mill

Number of Loads:		5	with a round Trip Distance of:	38	miles
Number of Loads:		9	with a round Trip Distance of:	50	miles
Number of Loads:		1	with a round Trip Distance of:	190	miles
Source: Number of loads and distances to each mill provided by John Crain.					

HDDV Haul Truck Emissions

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
lbs	**4.487**	**0.565**	**1.325**	**0.022**	**0.177**	**0.130**	**2275.181**
tons	**0.002**	**0.000**	**0.001**	**0.000**	**0.000**	**0.000**	**1.138**

Example Calculation: NO_x emissions (lbs) = 30 miles per trip * 5,021 trips * NO_x emission factor (g/mile) * lb/453.6 g

Timber Thinning Sale (Stand 2-19 and east 2-37)--FY2015
Project Summary (tpy)

Activity	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
Air Emissions from Cutting Equipment	0.057	0.005	0.026	0.005	0.004	0.004	6.445
Air Emissions from Hauling Wood to the Mill	0.002	0.000	0.001	0.000	0.000	0.000	1.138
TOTAL	**0.059**	**0.005**	**0.026**	**0.005**	**0.004**	**0.004**	**7.582**

Estimates Air Emissions from Cutting Equipment and Site Preperation

Equipment	Number	Hours	Horsepower
Feller buncher	1	8	241
Skidder	1	16	175
Loader*	1	32	188
Chainsaw	1	1.6	4
Sources: Number of units and hours per unit provided by John Crain. Horsepower rating for the chainsaw provided by John Crain. Horsepower rating for the feller/buncher, skidder, and loader taken from various online sources for commerically-available products.			

* Following a clear cut, site preperation entails operation of the loader for two 8 hour periods. Site preperation includes root raking debris, creating raised beds for future planting, and applying herbicides.

Emission Factors (lb/1000 hp hr)								
Equipment	**Load Factor**	**CO**	**VOC**	**NOx**	**SO2**	**CO2**	**PM10**	**PM2.5**
Diesel Forest Equipment-Feller/Buncher/Skidder	59%	3.26	0.71	9.57	0.84	1186.29	0.66	0.64
Diesel Rubber Tire Loader	59%	4.87	0.86	11.75	0.84	1188.5	0.82	0.79
2 Stroke Chain Saws <6 HP (Commercial)	70%	764.61	176.42	2.25	0.33	1625.09	20.97	19.29
Source: U.S. Air Force (USAF). 2013. *Air Force Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants for Mobile Sources at U.S. Air Force Installations.* Table 4-1. Criteria Pollutant Emission Factors for Nonroad Engine and Equipment. January 2013.								

Project Emission Estimates (lb/year)								
Equipment		**CO**	**VOC**	**NOx**	**SO2**	**CO2**	**PM10**	**PM2.5**
Diesel Forest Equipment-Feller/Buncher		3.708	0.808	10.886	0.956	1349.429	0.751	0.728
Diesel Forest Equipment-Skidder		5.386	1.173	15.810	1.388	1959.751	1.090	1.057
Diesel Rubber Tire Loader		17.286	3.053	41.706	2.982	4218.509	2.911	2.804
2 Stroke Chain Saws <6 HP (Commercial)		3.425	0.790	0.010	0.001	7.280	0.094	0.086
TOTAL		**29.805**	**5.823**	**68.412**	**5.326**	**7534.970**	**4.846**	**4.676**
TOTAL (tons/year)		**0.015**	**0.003**	**0.034**	**0.003**	**3.767**	**0.002**	**0.002**

Estimates Air Emissions from Hauling Wood to the Mill

Heavy Duty Diesel Vehicle (HDDV) Average Emission Factors (grams/mile)

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
HDDV	**2.452**	**0.309**	**0.724**	**0.012**	**0.097**	**0.071**	**1243.400**

Notes:
Emission factors for Diesel HDDV Heavy-Duty Vehicles in Georgia at low altitude for 2015 (Table 5-11. On-Road Vehicle Factors--2015)

Number of Loads to each Respective Mill

Number of Loads:		5	with a round Trip Distance of:	38	miles
Number of Loads:		3	with a round Trip Distance of:	50	miles
Number of Loads:		0	with a round Trip Distance of:	190	miles
Source: Number of loads and distances to each mill provided by John Crain.					

HDDV Haul Truck Emissions

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
lbs	**1.838**	**0.232**	**0.543**	**0.009**	**0.073**	**0.053**	**932.002**
tons	**0.001**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.466**

Example Calculation: NO_x emissions (lbs) = 30 miles per trip * 5,021 trips * NO_x emission factor (g/mile) * lb/453.6 g

Clearcut (Stands 1-10 & east 2-07)--FY2015
Project Summary (tpy)

Activity	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
Air Emissions from Cutting Equipment	0.034	0.003	0.015	0.003	0.002	0.002	3.767
Air Emissions from Hauling Wood to the Mill	0.001	0.000	0.000	0.000	0.000	0.000	0.466
TOTAL	**0.035**	**0.003**	**0.015**	**0.003**	**0.002**	**0.002**	**4.233**

Estimates Air Emissions from Cutting Equipment

Equipment	Number	Hours	Horsepower
Feller buncher	1	24	241
Skidder	2	26	175
Loader	1	26	188
Chainsaw	1	2.6	4

Sources: Number of units and hours per unit provided by John Crain. Horsepower rating for the chainsaw provided by John Crain. Horsepower rating for the feller/buncher, skidder, and loader taken from various online sources for commerically-available products.

Emission Factors (lb/1000 hp hr)								
Equipment	**Load Factor**	**CO**	**VOC**	**NOx**	**SO2**	**CO2**	**PM10**	**PM2.5**
Diesel Forest Equipment-Feller/Buncher/Skidder	59%	3.26	0.71	9.57	0.84	1186.29	0.66	0.64
Diesel Rubber Tire Loader	59%	4.87	0.86	11.75	0.84	1188.5	0.82	0.79
2 Stroke Chain Saws <6 HP (Commercial)	70%	764.61	176.42	2.25	0.33	1625.09	20.97	19.29

Source: U.S. Air Force (USAF). 2013. *Air Force Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants for Mobile Sources at U.S. Air Force Installations.* Table 4-1. Criteria Pollutant Emission Factors for Nonroad Engine and Equipment. January 2013.

Project Emission Estimates (lb/year)								
Equipment		**CO**	**VOC**	**NOx**	**SO2**	**CO2**	**PM10**	**PM2.5**
Diesel Forest Equipment-Feller/Buncher		11.125	2.423	32.658	2.867	4048.286	2.252	2.184
Diesel Forest Equipment-Skidder		17.503	3.812	51.381	4.510	6369.191	3.544	3.436
Diesel Rubber Tire Loader		14.045	2.480	33.886	2.422	3427.539	2.365	2.278
2 Stroke Chain Saws <6 HP (Commercial)		5.566	1.284	0.016	0.002	11.831	0.153	0.140
TOTAL		**48.239**	**9.999**	**117.942**	**9.801**	**13856.846**	**8.313**	**8.039**

TOTAL (tons/year)		**0.024**	**0.005**	**0.059**	**0.005**	**6.928**	**0.004**	**0.004**

Estimates Air Emissions from Hauling Wood to the Mill

Heavy Duty Diesel Vehicle (HDDV) Average Emission Factors (grams/mile)

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
HDDV	**2.452**	**0.309**	**0.724**	**0.012**	**0.097**	**0.071**	**1243.400**

Notes:

Emission factors for Diesel HDDV Heavy-Duty Vehicles in Georgia at low altitude for 2015 (Table 5-11. On-Road Vehicle Factors--2015)

Number of Loads to each Respective Mill

Number of Loads:		12	with a round Trip Distance of:	38	miles
Number of Loads:		12	with a round Trip Distance of:	50	miles
Number of Loads:		0	with a round Trip Distance of:	190	miles
Source: Number of loads and distances to each mill provided by John Crain.					

HDDV Haul Truck Emissions

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
lbs	**5.708**	**0.719**	**1.686**	**0.028**	**0.226**	**0.165**	**2894.688**
tons	**0.003**	**0.000**	**0.001**	**0.000**	**0.000**	**0.000**	**1.447**

Example Calculation: NO_x emissions (lbs) = 30 miles per trip * 5,021 trips * NO_x emission factor (g/mile) * lb/453.6 g

Timber Thinning Sale (Stands 2-08 and 2-24)--FY2015
Project Summary (tpy)

Activity	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
Air Emissions from Cutting Equipment	0.059	0.005	0.024	0.005	0.004	0.004	6.928
Air Emissions from Hauling Wood to the Mill	0.003	0.000	0.001	0.000	0.000	0.000	1.447
TOTAL	**0.062**	**0.005**	**0.025**	**0.005**	**0.004**	**0.004**	**8.376**

Estimates Air Emissions from Hardwood Midstory Control (Chemical) Projects

Stands	Size (Acres)
2-08	21
2-07	12
1-31	38
2-16 (eastern)	13
2-19	13
1-20	9
1-15	30
1-17	20
1-18	11
Total	**167**

Equipment	Number of Units	Hours per year	Skidder Horsepower
Skidder	1	16.7	175
Sources: The skidder can spray 10 acres per hour according to John Crain. Horsepower rating for the skidder taken from various online sources for commerically-available products.			

Emission Factors (lb/1000 hp hr)								
Equipment	**Load Factor**	**CO**	**VOC**	**NOx**	**SO2**	**CO2**	**PM10**	**PM2.5**
Diesel Forest Equipment-Feller/Buncher/Skidder	59%	3.26	0.71	9.57	0.84	1186.29	0.66	0.64
Source: U.S. Air Force (USAF). 2013. *Air Force Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants for Mobile Sources at U.S. Air Force Installations.* Table 4-1. Criteria Pollutant Emission Factors for Nonroad Engine and Equipment. January 2013.								

Project Emission Estimates (lb/year)								
Equipment		**CO**	**VOC**	**NOx**	**SO2**	**CO2**	**PM10**	**PM2.5**
Diesel Forest Equipment-Skidder		5.621	1.224	16.501	1.448	2045.490	1.138	1.104

TOTAL (tons/year)		**0.003**	**0.001**	**0.008**	**0.001**	**1.023**	**0.001**	**0.001**

Estimates Air Emissions from Hardwood Midstory Control (Mechanical) Projects

Stands	Size (Acres)
2-11	27
2-16	12
2-17	30
2-24	21
2-08	9
2-18	6
Total	**105**

Equipment	Number of Units	Hours per year	Skidder Horsepower
Skidder	1	52.5	175
Sources: HDR assumes that a skidder can process 2 acres per hour. Horsepower rating for the skidder taken from various online sources for commerically-available products. Stand 2-16 is anticipated to be worked with a bobcat rather than a skidder. Because a skidder likely has a higher horsepower rating than a bobcat, this emissions estimate is overly conservative.			

Emission Factors (lb/1000 hp hr)								
Equipment	**Load Factor**	**CO**	**VOC**	**NOx**	**SO2**	**CO2**	**PM10**	**PM2.5**
Diesel Forest Equipment-Feller/Buncher/Skidder	59%	3.26	0.71	9.57	0.84	1186.29	0.66	0.64
Source: U.S. Air Force (USAF). 2013. *Air Force Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants for Mobile Sources at U.S. Air Force Installations.* Table 4-1. Criteria Pollutant Emission Factors for Nonroad Engine and Equipment. January 2013.								

Project Emission Estimates (lb/year)								
Equipment		**CO**	**VOC**	**NOx**	**SO2**	**CO2**	**PM10**	**PM2.5**
Diesel Forest Equipment-Skidder		17.671	3.849	51.875	4.553	6430.433	3.578	3.469
TOTAL (tons/year)		**0.009**	**0.002**	**0.026**	**0.002**	**3.215**	**0.002**	**0.002**

Note: Mechanical chopping operations will likely generate some particulate matter emissions; however, because the project will not entail fine chopping, the majority of particulates will fall to the ground. Therefore, fugitive particulate emissions from the chopping is expected to be minimal.

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Summary of Air Emissions for 2016 (tpy)

Activity	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
Clearcut (Stands 2-08 and 2-07)--FY2016	0.043	0.004	0.019	0.003	0.003	0.003	5.715
Timber Thinning (Stands 1-18 and 1-16)--FY2016	0.057	0.005	0.025	0.004	0.004	0.004	8.608
Hardwood Midstory Control (Chemical)--FY2016	0.001	0.000	0.000	0.000	0.000	0.000	0.092
Site Preperation and Planting of LLF Pine, Stand 1-23	0.010	0.001	0.004	0.001	0.001	0.001	1.055
TOTAL	**0.111**	**0.010**	**0.049**	**0.008**	**0.008**	**0.007**	**15.469**

Comparison of Air Emissions to Regional Emissions (tpy)						
Location	**NO_x**	**VOC**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Lanier County	481	13,557	5,931	22	2,266	651
Lowndes County	6,476	25,765	33,591	784	8,746	2,367
Total	**6,957**	**39,322**	**39,522**	**806**	**11,012**	**3,018**
Percent of Regional	**0.0016%**	**0.0000%**	**0.0001%**	**0.0010%**	**0.0001%**	**0.0002%**

Estimates Air Emissions from Cutting Equipment and Site Preperation

Equipment	Number	Hours	Horsepower
Feller buncher	1	8	241
Skidder	1	20	175
Loader*	1	40	188
Chainsaw	1	2.4	4
Sources: Number of units and hours per unit provided by John Crain. Horsepower rating for the chainsaw provided by John Crain. Horsepower rating for the feller/buncher, skidder, and loader taken from various online sources for commerically-available products.			

* Following a clear cut, site preperation entails operation of the loader for two 8 hour periods. Site preperation includes root raking debris, creating raised beds for future planting, and applying herbicides.

Emission Factors (lb/1000 hp hr)								
Equipment	**Load Factor**	**CO**	**VOC**	**NOx**	**SO2**	**CO2**	**PM10**	**PM2.5**
Diesel Forest Equipment-Feller/Buncher/Skidder	59%	3.26	0.71	9.57	0.84	1186.29	0.66	0.64
Diesel Rubber Tire Loader	59%	4.87	0.86	11.75	0.84	1188.5	0.82	0.79
2 Stroke Chain Saws <6 HP (Commercial)	70%	764.61	176.42	2.25	0.33	1625.09	20.97	19.29
Source: U.S. Air Force (USAF). 2013. *Air Force Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants for Mobile Sources at U.S. Air Force Installations.* Table 4-1. Criteria Pollutant Emission Factors for Nonroad Engine and Equipment. January 2013.								

Project Emission Estimates (lb/year)								
Equipment		**CO**	**VOC**	**NOx**	**SO2**	**CO2**	**PM10**	**PM2.5**
Diesel Forest Equipment-Feller/Buncher		3.708	0.808	10.886	0.956	1349.429	0.751	0.728
Diesel Forest Equipment-Skidder		6.732	1.466	19.762	1.735	2449.689	1.363	1.322
Diesel Rubber Tire Loader		21.607	3.816	52.132	3.727	5273.137	3.638	3.505
2 Stroke Chain Saws <6 HP (Commercial)		5.138	1.186	0.015	0.002	10.921	0.141	0.130
TOTAL		**37.186**	**7.275**	**82.796**	**6.419**	**9083.175**	**5.893**	**5.684**

TOTAL (tons/year)		**0.019**	**0.004**	**0.041**	**0.003**	**4.542**	**0.003**	**0.003**

Estimates Air Emissions from Hauling Wood to the Mill

Heavy Duty Diesel Vehicle (HDDV) Average Emission Factors (grams/mile)

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
HDDV	**2.155**	**0.299**	**0.647**	**0.012**	**0.089**	**0.063**	**1243.400**

Notes:
Emission factors for Diesel HDDV Heavy-Duty Vehicles in Georgia at low altitude for 2016 (Table 5-12. On-Road Vehicle Factors--2016)

Number of Loads to each Respective Mill

Number of Loads:		7	with a round Trip Distance of:	38	miles
Number of Loads:		8	with a round Trip Distance of:	50	miles
Number of Loads:		1	with a round Trip Distance of:	190	miles
Source: Number of loads and distances to each mill provided by John Crain.					

HDDV Haul Truck Emissions

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
lbs	**4.067**	**0.564**	**1.221**	**0.023**	**0.168**	**0.119**	**2346.451**
tons	**0.002**	**0.000**	**0.001**	**0.000**	**0.000**	**0.000**	**1.173**

Example Calculation: NO_x emissions (lbs) = 30 miles per trip * 5,021 trips * NO_x emission factor (g/mile) * lb/453.6 g

Clearcut (Stands 2-08 and 2-07)--FY2016
Project Summary (tpy)

Activity	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
Air Emissions from Cutting Equipment	0.041	0.004	0.019	0.003	0.003	0.003	4.542
Air Emissions from Hauling Wood to the Mill	0.002	0.000	0.001	0.000	0.000	0.000	1.173
TOTAL	**0.043**	**0.004**	**0.019**	**0.003**	**0.003**	**0.003**	**5.715**

Estimates Air Emissions from Cutting Equipment

Equipment	Number	Hours	Horsepower
Feller buncher	1	16	241
Skidder	1	36	175
Loader	1	36	188
Chainsaw	1	3.6	4

Sources: Number of units and hours per unit provided by John Crain. Horsepower rating for the chainsaw provided by John Crain. Horsepower rating for the feller/buncher, skidder, and loader taken from various online sources for commerically-available products.

Emission Factors (lb/1000 hp hr)								
Equipment	**Load Factor**	**CO**	**VOC**	**NOx**	**SO2**	**CO2**	**PM10**	**PM2.5**
Diesel Forest Equipment-Feller/Buncher/Skidder	59%	3.26	0.71	9.57	0.84	1186.29	0.66	0.64
Diesel Rubber Tire Loader	59%	4.87	0.86	11.75	0.84	1188.5	0.82	0.79
2 Stroke Chain Saws <6 HP (Commercial)	70%	764.61	176.42	2.25	0.33	1625.09	20.97	19.29

Source: U.S. Air Force (USAF). 2013. *Air Force Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants for Mobile Sources at U.S. Air Force Installations.* Table 4-1. Criteria Pollutant Emission Factors for Nonroad Engine and Equipment. January 2013.

Project Emission Estimates (lb/year)								
Equipment		**CO**	**VOC**	**NOx**	**SO2**	**CO2**	**PM10**	**PM2.5**
Diesel Forest Equipment-Feller/Buncher		7.417	1.615	21.772	1.911	2698.857	1.502	1.456
Diesel Forest Equipment-Skidder		12.117	2.639	35.572	3.122	4409.440	2.453	2.379
Diesel Rubber Tire Loader		19.446	3.434	46.919	3.354	4745.823	3.274	3.155
2 Stroke Chain Saws <6 HP (Commercial)		7.707	1.778	0.023	0.003	16.381	0.211	0.194
TOTAL		**46.688**	**9.467**	**104.286**	**8.391**	**11870.501**	**7.440**	**7.184**

TOTAL (tons/year)		**0.023**	**0.005**	**0.052**	**0.004**	**5.935**	**0.004**	**0.004**

Estimates Air Emissions from Hauling Wood to the Mill

Heavy Duty Diesel Vehicle (HDDV) Average Emission Factors (grams/mile)

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
HDDV	**2.155**	**0.299**	**0.647**	**0.012**	**0.089**	**0.063**	**1243.400**

Notes:

Emission factors for Diesel HDDV Heavy-Duty Vehicles in Georgia at low altitude for 2016 (Table 5-12. On-Road Vehicle Factors--2016)

Number of Loads to each Respective Mill

Number of Loads:		0	with a round Trip Distance of:	38	miles
Number of Loads:		20	with a round Trip Distance of:	50	miles
Number of Loads:		5	with a round Trip Distance of:	190	miles
Source: Number of loads and distances to each mill provided by John Crain.					

HDDV Haul Truck Emissions

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
lbs	**9.264**	**1.285**	**2.781**	**0.052**	**0.383**	**0.271**	**5345.304**
tons	**0.005**	**0.001**	**0.001**	**0.000**	**0.000**	**0.000**	**2.673**

Example Calculation: NO_x emissions (lbs) = 30 miles per trip * 5,021 trips * NO_x emission factor (g/mile) * lb/453.6 g

Timber Thinning (Stands 1-18 and 1-16)--FY2016
Project Summary (tpy)

Activity	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
Air Emissions from Cutting Equipment	0.052	0.005	0.023	0.004	0.004	0.004	5.935
Air Emissions from Hauling Wood to the Mill	0.005	0.001	0.001	0.000	0.000	0.000	2.673
TOTAL	**0.057**	**0.005**	**0.025**	**0.004**	**0.004**	**0.004**	**8.608**

Estimates Air Emissions from Hardwood Midstory Control (Chemical) Projects

Stands	Size (Acres)
2-11	15
Total	**15**

Equipment	Number of Units	Hours per year	Skidder Horsepower
Skidder	1	1.5	175

Sources: The skidder can spray 10 acres per hour according to John Crain. Horsepower rating for the skidder taken from various online sources for commerically-available products.

Emission Factors (lb/1000 hp hr)								
Equipment	**Load Factor**	**CO**	**VOC**	**NOx**	**SO2**	**CO2**	**PM10**	**PM2.5**
Diesel Forest Equipment-Feller/Buncher/Skidder	59%	3.26	0.71	9.57	0.84	1186.29	0.66	0.64

Source: U.S. Air Force (USAF). 2013. *Air Force Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants for Mobile Sources at U.S. Air Force Installations.* Table 4-1. Criteria Pollutant Emission Factors for Nonroad Engine and Equipment. January 2013.

Project Emission Estimates (lb/year)								
Equipment		**CO**	**VOC**	**NOx**	**SO2**	**CO2**	**PM10**	**PM2.5**
Diesel Forest Equipment-Skidder		0.505	0.110	1.482	0.130	183.727	0.102	0.099
TOTAL (tons/year)		**0.000**	**0.000**	**0.001**	**0.000**	**0.092**	**0.000**	**0.000**

Estimates Air Emissions from Site Preperation and Planting of LLF Pine, Stand 1-23

Equipment	Number	Hours	Horsepower
Loader	1	16	188
Sources: Horsepower rating for the loader was taken from various online sources for commerically-available products. It is assumed that site preperation and planting on a 12 acre site would take two 8-hour days.			

Emission Factors (lb/1000 hp hr)								
Equipment	**Load Factor**	**CO**	**VOC**	**NOx**	**SO2**	**CO2**	**PM10**	**PM2.5**
Diesel Rubber Tire Loader	59%	4.87	0.86	11.75	0.84	1188.5	0.82	0.79
Source: U.S. Air Force (USAF). 2013. *Air Force Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants for Mobile Sources at U.S. Air Force Installations.* Table 4-1. Criteria Pollutant Emission Factors for Nonroad Engine and Equipment. January 2013.								

Project Emission Estimates (lb/year)								
Equipment		**CO**	**VOC**	**NOx**	**SO2**	**CO2**	**PM10**	**PM2.5**
Diesel Rubber Tire Loader		8.643	1.526	20.853	1.491	2109.255	1.455	1.402
TOTAL (tons/year)		**0.004**	**0.001**	**0.010**	**0.001**	**1.055**	**0.001**	**0.001**

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Summary of Air Emissions for 2017 (tpy)

Activity	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
Seed Tree Regeneration Harvest (Stand 1-15)--FY 2017	0.091	0.009	0.038	0.007	0.006	0.006	16.441
TOTAL	**0.091**	**0.009**	**0.038**	**0.007**	**0.006**	**0.006**	**16.441**

Comparison of Air Emissions to Regional Emissions (tpy)						
Location	**NO_x**	**VOC**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Lanier County	481	13,557	5,931	22	2,266	651
Lowndes County	6,476	25,765	33,591	784	8,746	2,367
Total	**6,957**	**39,322**	**39,522**	**806**	**11,012**	**3,018**
Percent of Regional	**0.0013%**	**0.0000%**	**0.0001%**	**0.0008%**	**0.0001%**	**0.0002%**

Estimates Air Emissions from Cutting Equipment

Equipment	Number	Hours	Horsepower
Feller buncher	1	24	241
Skidder	2	36	175
Loader	1	44	188
Chainsaw	1	4.4	4

Sources: Number of units and hours per unit provided by John Crain. Horsepower rating for the chainsaw provided by John Crain. Horsepower rating for the feller/buncher, skidder, and loader taken from various online sources for commerically-available products.

Emission Factors (lb/1000 hp hr)								
Equipment	**Load Factor**	**CO**	**VOC**	**NOx**	**SO2**	**CO2**	**PM10**	**PM2.5**
Diesel Forest Equipment-Feller/Buncher/Skidder	59%	3.26	0.71	9.57	0.84	1186.29	0.66	0.64
Diesel Rubber Tire Loader	59%	4.87	0.86	11.75	0.84	1188.5	0.82	0.79
2 Stroke Chain Saws <6 HP (Commercial)	70%	764.61	176.42	2.25	0.33	1625.09	20.97	19.29

Source: U.S. Air Force (USAF). 2013. *Air Force Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants for Mobile Sources at U.S. Air Force Installations.* Table 4-1. Criteria Pollutant Emission Factors for Nonroad Engine and Equipment. January 2013.

Project Emission Estimates (lb/year)								
Equipment		**CO**	**VOC**	**NOx**	**SO2**	**CO2**	**PM10**	**PM2.5**
Diesel Forest Equipment-Feller/Buncher		11.125	2.423	32.658	2.867	4048.286	2.252	2.184
Diesel Forest Equipment-Skidder		24.235	5.278	71.143	6.245	8818.880	4.906	4.758
Diesel Rubber Tire Loader		23.768	4.197	57.346	4.100	5800.450	4.002	3.856
2 Stroke Chain Saws <6 HP (Commercial)		9.420	2.173	0.028	0.004	20.021	0.258	0.238
TOTAL		**68.548**	**14.072**	**161.175**	**13.215**	**18687.637**	**11.419**	**11.035**

TOTAL (tons/year)		**0.034**	**0.007**	**0.081**	**0.007**	**9.344**	**0.006**	**0.006**

Estimates Air Emissions from Hauling Wood to the Mill

Heavy Duty Diesel Vehicle (HDDV) Average Emission Factors (grams/mile)

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
HDDV	**1.883**	**0.290**	**0.580**	**0.012**	**0.078**	**0.053**	**1242.900**

Notes:

Emission factors for Diesel HDDV Heavy-Duty Vehicles in Georgia at low altitude for 2017 (Table 5-13. On-Road Vehicle Factors--2017)

Number of Loads to each Respective Mill

Number of Loads:		10	with a round Trip Distance of:	38	miles
Number of Loads:		20	with a round Trip Distance of:	50	miles
Number of Loads:		20	with a round Trip Distance of:	190	miles
Source: Number of loads and distances to each mill provided by John Crain.					

HDDV Haul Truck Emissions

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
lbs	**21.503**	**3.312**	**6.623**	**0.137**	**0.891**	**0.605**	**14193.611**
tons	**0.011**	**0.002**	**0.003**	**0.000**	**0.000**	**0.000**	**7.097**

Example Calculation: NO_x emissions (lbs) = 30 miles per trip * 5,021 trips * NO_x emission factor (g/mile) * lb/453.6 g

Seed Tree Regeneration Harvest (Stand 1-15)--FY 2017

Project Summary (tpy)

Activity	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
Air Emissions from Cutting Equipment	0.081	0.007	0.034	0.007	0.006	0.006	9.344
Air Emissions from Hauling Wood to the Mill	0.011	0.002	0.003	0.000	0.000	0.000	7.097
TOTAL	**0.091**	**0.009**	**0.038**	**0.007**	**0.006**	**0.006**	**16.441**

Summary of Air Emissions for 2018 (tpy)

Activity	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
Clearcut (East side of Stand 2-24)--FY2018	0.042	0.004	0.018	0.003	0.003	0.003	7.590
Seed Tree Regeneration (Stand 2-07)--FY2018	0.028	0.003	0.012	0.002	0.002	0.002	4.162
TOTAL	**0.070**	**0.007**	**0.030**	**0.005**	**0.005**	**0.004**	**11.752**

Comparison of Air Emissions to Regional Emissions (tpy)						
Location	**NO_x**	**VOC**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Lanier County	481	13,557	5,931	22	2,266	651
Lowndes County	6,476	25,765	33,591	784	8,746	2,367
Total	**6,957**	**39,322**	**39,522**	**806**	**11,012**	**3,018**
Percent of Regional	**0.0010%**	**0.0000%**	**0.0001%**	**0.0006%**	**0.0000%**	**0.0001%**

Estimates Air Emissions from Cutting and Site Preperation Equipment

Equipment	Number	Hours	Horsepower
Feller buncher	1	8	241
Skidder	1	18	175
Loader*	1	34	188
Chainsaw	1	1.8	4
Sources: Number of units and hours per unit provided by John Crain. Horsepower rating for the chainsaw provided by John Crain. Horsepower rating for the feller/buncher, skidder, and loader taken from various online sources for commerically-available products.			

* Following a clear cut, site preperation entails operation of the loader for two 8 hour periods. Site preperation includes root raking debris, creating raised beds for future planting, and applying herbicides.

Emission Factors (lb/1000 hp hr)								
Equipment	**Load Factor**	**CO**	**VOC**	**NOx**	**SO2**	**CO2**	**PM10**	**PM2.5**
Diesel Forest Equipment-Feller/Buncher/Skidder	59%	3.26	0.71	9.57	0.84	1186.29	0.66	0.64
Diesel Rubber Tire Loader	59%	4.87	0.86	11.75	0.84	1188.5	0.82	0.79
2 Stroke Chain Saws <6 HP (Commercial)	70%	764.61	176.42	2.25	0.33	1625.09	20.97	19.29
Source: U.S. Air Force (USAF). 2013. *Air Force Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants for Mobile Sources at U.S. Air Force Installations.* Table 4-1. Criteria Pollutant Emission Factors for Nonroad Engine and Equipment. January 2013.								

Project Emission Estimates (lb/year)								
Equipment		**CO**	**VOC**	**NOx**	**SO2**	**CO2**	**PM10**	**PM2.5**
Diesel Forest Equipment-Feller/Buncher		3.708	0.808	10.886	0.956	1349.429	0.751	0.728
Diesel Forest Equipment-Skidder		6.059	1.320	17.786	1.561	2204.720	1.227	1.189
Diesel Rubber Tire Loader		18.366	3.243	44.313	3.168	4482.166	3.092	2.979
2 Stroke Chain Saws <6 HP (Commercial)		3.854	0.889	0.011	0.002	8.190	0.106	0.097
TOTAL		**31.987**	**6.260**	**72.996**	**5.686**	**8044.505**	**5.176**	**4.994**

TOTAL (tons/year)		**0.016**	**0.003**	**0.036**	**0.003**	**4.022**	**0.003**	**0.002**

Estimates Air Emissions from Hauling Wood to the Mill

Heavy Duty Diesel Vehicle (HDDV) Average Emission Factors (grams/mile)

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
HDDV	**1.883**	**0.290**	**0.580**	**0.012**	**0.078**	**0.053**	**1242.900**

Notes:
Emission factors are for Diesel HDDV Heavy-Duty Vehicles in Georgia at low altitude for 2017 (Table 5-13. On-Road Vehicle Factors--2017).
Emission factors for 2018 are not available in the *Air Force Guide for Air Force Mobile Sources* .

Number of Loads to each Respective Mill

Number of Loads:		8	with a round Trip Distance of:	38	miles
Number of Loads:		8	with a round Trip Distance of:	50	miles
Number of Loads:		10	with a round Trip Distance of:	190	miles
Source: Number of loads and distances to each mill provided by John Crain.					

HDDV Haul Truck Emissions

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
lbs	**10.810**	**1.665**	**3.330**	**0.069**	**0.448**	**0.304**	**7135.167**
tons	**0.005**	**0.001**	**0.002**	**0.000**	**0.000**	**0.000**	**3.568**

Example Calculation: NO_x emissions (lbs) = 30 miles per trip * 5,021 trips * NO_x emission factor (g/mile) * lb/453.6 g

Clearcut (East side of Stand 2-24)--FY2018
Project Summary (tpy)

Activity	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
Air Emissions from Cutting Equipment	0.036	0.003	0.016	0.003	0.003	0.002	4.022
Air Emissions from Hauling Wood to the Mill	0.005	0.001	0.002	0.000	0.000	0.000	3.568
TOTAL	**0.042**	**0.004**	**0.018**	**0.003**	**0.003**	**0.003**	**7.590**

Estimates Air Emissions from Cutting Equipment

Equipment	Number	Hours	Horsepower
Feller buncher	1	8	241
Skidder	1	18	175
Loader	1	18	188
Chainsaw	1	1.8	4

Sources: Number of units and hours per unit provided by John Crain. Horsepower rating for the chainsaw provided by John Crain. Horsepower rating for the feller/buncher, skidder, and loader taken from various online sources for commerically-available products.

Emission Factors (lb/1000 hp hr)								
Equipment	**Load Factor**	**CO**	**VOC**	**NOx**	**SO2**	**CO2**	**PM10**	**PM2.5**
Diesel Forest Equipment-Feller/Buncher/Skidder	59%	3.26	0.71	9.57	0.84	1186.29	0.66	0.64
Diesel Rubber Tire Loader	59%	4.87	0.86	11.75	0.84	1188.5	0.82	0.79
2 Stroke Chain Saws <6 HP (Commercial)	70%	764.61	176.42	2.25	0.33	1625.09	20.97	19.29

Source: U.S. Air Force (USAF). 2013. *Air Force Guide for Air Force Mobile Sources. Methods for Estimating Emissions of Air Pollutants for Mobile Sources at U.S. Air Force Installations.* Table 4-1. Criteria Pollutant Emission Factors for Nonroad Engine and Equipment. January 2013.

Project Emission Estimates (lb/year)								
Equipment		**CO**	**VOC**	**NOx**	**SO2**	**CO2**	**PM10**	**PM2.5**
Diesel Forest Equipment-Feller/Buncher		3.708	0.808	10.886	0.956	1349.429	0.751	0.728
Diesel Forest Equipment-Skidder		6.059	1.320	17.786	1.561	2204.720	1.227	1.189
Diesel Rubber Tire Loader		9.723	1.717	23.460	1.677	2372.912	1.637	1.577
2 Stroke Chain Saws <6 HP (Commercial)		3.854	0.889	0.011	0.002	8.190	0.106	0.097
TOTAL		**23.344**	**4.733**	**52.143**	**4.195**	**5935.251**	**3.720**	**3.592**

TOTAL (tons/year)		**0.012**	**0.002**	**0.026**	**0.002**	**2.968**	**0.002**	**0.002**

Estimates Air Emissions from Hauling Wood to the Mill

Heavy Duty Diesel Vehicle (HDDV) Average Emission Factors (grams/mile)

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
HDDV	**1.883**	**0.290**	**0.580**	**0.012**	**0.078**	**0.053**	**1242.900**

Notes:
Emission factors are for Diesel HDDV Heavy-Duty Vehicles in Georgia at low altitude for 2017 (Table 5-13. On-Road Vehicle Factors--2017).
Emission factors for 2018 are not available in the *Air Force Guide for Air Force Mobile Sources* .

Number of Loads to each Respective Mill

Number of Loads:		4	with a round Trip Distance of:	38	miles
Number of Loads:		3	with a round Trip Distance of:	50	miles
Number of Loads:		3	with a round Trip Distance of:	190	miles
Source: Number of loads and distances to each mill provided by John Crain.					

HDDV Haul Truck Emissions

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
lbs	**3.620**	**0.557**	**1.115**	**0.023**	**0.150**	**0.102**	**2389.349**
tons	**0.002**	**0.000**	**0.001**	**0.000**	**0.000**	**0.000**	**1.195**

Example Calculation: NO_x emissions (lbs) = 30 miles per trip * 5,021 trips * NO_x emission factor (g/mile) * lb/453.6 g

Seed Tree Regeneration (Stand 2-07)--FY2018

Project Summary (tpy)

Activity	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
Air Emissions from Cutting Equipment	0.026	0.002	0.012	0.002	0.002	0.002	2.968
Air Emissions from Hauling Wood to the Mill	0.002	0.000	0.001	0.000	0.000	0.000	1.195
TOTAL	**0.028**	**0.003**	**0.012**	**0.002**	**0.002**	**0.002**	**4.162**

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